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The Journal of Speech Disorders

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The Journal of Speech Disorders

VOLUME 11 DECEMBER, 1946 NUMBER 4

PROGRAM

Twenty-Second Annual Conference of the American Speech Correction Association

SHERMAN HOTEL, CHICAGO, ILLINOIS

THE AMERICAN Speech Correction Association will hold its 1946 convention December 29, 30, 31 and January 1, in conjunction with the Speech Association of America at the Sherman Hotel in Chicago, Illinois.

The program for the 1946 meeting is as follows:

Sunday, December 29

1:30 p.m. Meeting of the officers and councillors of the Association. Room 105.

2:00 p.m. Registration begins.

7:30 p.m. Meeting of the officers and councillors (council meetings open to all members). Room 105.

Monday, December 30

8:30 a.m. Registration.

9:00 a.m. Joint meeting with S.A.A., A.E.T.A. and N.U.E.A. Ball Room.

SHORT COURSE

Louis XIV Room

Chairman: Charles R. Strother, State University of Iowa

10:45 a.m. Speech Sound Mastery During Infancy. *Orvis C. Irwin, State University of Iowa.*

12:00 m. Adjournment.

TECHNICAL PAPERS

Room 105

Chairman: Harold Westlake, Northwestern University

10:50 a.m. A Revised Classification of Disorders of Speech with Appended Suggestions for its Implementation. *Harry S. Wise, Louisiana State University.*

11:20 a.m. Relationships of the Articulations of the Mandible to Hearing and Speech. *David J. Goodfriend, Philadelphia.*

12:00 m. Adjournment.

2:00 p.m. Meeting of officers and councillors. Room 105.

REHABILITATION OF CRIPPLED AND HARD OF HEARING CHILDREN
Louis XIV Room

Chairman: Jayne Shover, National Society for Crippled Children and Adults, Inc.

2:10 p.m. Speech Problems with the Cerebral Palsied. *Juliette M. Gratke, Children's Hospital, Denver, Colorado.*
2:45 p.m. Films: Speech and Hearing Rehabilitation of Crippled Children at Summer Centers. *National Society for Crippled Children and Adults, Inc.*
3:15 p.m. A Quantitative Method of Testing the Hearing of Young Children. *Jacqueline Keaster, State University of Iowa.*
3:30 p.m. A Group Audiometer Pure Tone Hearing Test. *Scott N. Reger* and *Hayes A. Newby, State University of Iowa.*
3:45 p.m. Adjournment.

STATE AND NATIONWIDE PROGRAMS
Louis XIV Room

Chairman: Clarence T. Simon, President of the American Speech Correction Association

4:00 p.m. Mobilizing Our Nationwide Resources for Services to the Handicapped. *Lawrence J. Linck, Executive Director, N.S.C.C.A.*
4:45 p.m. Summary of Results of State-Wide Program for the Conservation of Hearing Among School Children in Michigan. *Courtney D. Osborn, Michigan Department of Health.*
5:30 p.m. Discussion.
6:00 p.m. Adjournment.

8:00 p.m. Business meeting of A.S.C.A. Louis XIV Room.

Tuesday, December 31

SYMPOSIUM ON TEACHER TRAINING AND CERTIFICATION
Louis XIV Room

Chairman: Severina Nelson, University of Illinois

9:10 a.m. Discussion of Training Standards and Certification Needs and Requirements. Panel: Severina Nelson, University of Illinois; Martin F. Palmer, University of Wichita; Robert West, University of Wisconsin; Ray Graham, Director of Special Education, Illinois State Department of Public Instruction; Jeanette O. Anderson, Rockford College.
10:30 a.m. Discussion.
10:45 a.m. Adjournment.

HEARING: RESEARCH, DIAGNOSIS AND REHABILITATION
Room 105

Chairman: Mildred Berry, Rockford College

9:10 a.m. Methods of Testing Audition in Infancy and Childhood. *Lee Meyerson, Harvard University.*
9:35 a.m. A University Hearing Aid Clinic. *Leroy Hedgecock, University of Minnesota.*
10:00 a.m. Foreseeable Research Areas Concerning Problems of the Hard of Hearing. *Delyte W. Morris, Ohio State University.*
10:35 a.m. Discussion.
10:45 a.m. Adjournment.

SURVEYS OF CLASSROOM TEACHERS
Louis XIV Room

Chairman: Hildred Gross, Detroit Public Schools

11:10 a.m. *Bryng Bryngelson, University of Minnesota.*
11:40 a.m. Discussion.
12:00 m. Adjournment.

STATE PROJECTS FOR SPEECH RE-EDUCATION
Room 105

Chairman: Herbert Koepp-Baker, University of Illinois

11:10 a.m. A State Supported Resident Summer School for Children Handicapped in Speech, Reading and Hearing. *Leon Lassers, State Department of Education, Salem, Oregon.*
11:35 a.m. A New State Program of Speech Correction in Virginia. *James M. Mullendore, University of Virginia.*
12:00 m. Adjournment.
12:15 p.m. Joint luncheon for A.S.C.A., S.A.A., A.E.T.A. and N.U.E.A.

HOW OUR THERAPIES FOR STUTTERING HAVE CHANGED
Louis XIV Room

Chairman: Arthur Secord, Brooklyn College

2:00 p.m. Speakers:
Wendell Johnson, State University of Iowa.
Charles Van Riper, Western Michigan College of Education.
Naomi Hunter, University of Illinois.
Carl Ritzman, University of Oklahoma.
3:00 p.m. Open forum for discussion.
4:00 p.m. Adjournment.

VISIBLE SPEECH FOR THE DEAF
Louis XIV Room

Chairman: George Kopp, University of Michigan

4:00 p.m. A Progress Report on the Educational Evaluation of Visible Speech. *George Kopp, University of Michigan and Harriet Green, Michigan State Normal College.*
5:00 p.m. Adjournment.

5:00 p.m. Reception and tea for A.S.C.A. sponsored by the Chicago Speech Correction Society. Foyer outside of Louis XIV Room.

Wednesday, January 1, 1947

SHORT COURSE
Louis XIV Room

Chairman: Wendell Johnson, State University of Iowa

10:10 a.m. Research on Stuttering in Terms of Modern Theories of Learning. *George Wischner, State University of Iowa.*
11:00 a.m. Discussion.
11:15 a.m. Adjournment.

TECHNICAL PAPERS
Room 105

Chairman: E. William Bilto, Wayne University

10:10 a.m. Voice and Personality. *Katherine Thorne, University of Minnesota.*
10:35 a.m. Selection of Some Typical Voice Cases for Whom Personality Adjustment Techniques were More Important Than Vocal Exercises. *Melba Hurd Duncan, Brooklyn College.*
11:00 a.m. Discussion.

11:15 a.m. Business meeting of A.S.C.A. Louis XIV Room.

TESTING AND RE-EDUCATIONAL TECHNIQUES
Louis XIV Room

Chairman: Paul Moore, Northwestern University

2:10 p.m. Methods of Measuring Articulation in Preschool Children. *Mildred Templin, University of Minnesota.*
2:35 p.m. Experiments in the Use of Conversation in Speech Rehabilitation to Promote Speed and Retention of Learning. *Ollie Backus, University of Michigan and Harriet Dunn, Vermont Association for the Crippled.*
3:05 p.m. Incidence of and the Program for Cleft Palate in the State of Wisconsin. *Gretchen Mueller Phair, Wisconsin Department of Public Instruction.*
3:35 p.m. The Speech Correctionist in Private Practice. *Paul Knight, Chicago.*
4:00 p.m. Adjournment.

NOTICE TO PARTICIPANTS

All papers presented in the convention program are to be deposited with Section chairmen, who will submit them to the Editor of the *Journal of Speech Disorders* for consideration with respect to publication.

CREDIT FOR SHORT COURSES

Dr. Martin F. Palmer, Chairman, Committee on Education, has announced that the Committee is considering a plan for awarding credit—with respect to evaluation of membership and change of membership status applications—for attendance at convention short courses. Official announcement will be made in the convention.

JOURNAL OF SPEECH DISORDERS 1946, **11**, 255-275

Parental Maladjustment and Functional Articulatory Defects in Children

Kenneth Scott Wood*

IN EARLY INFANCY the child is obliged to accept adult standards for his behavior. His well-being is determined by them at every moment. As he grows older, his own urges may run counter to adult standards and directives, and his adjustment mechanism is burdened by the ever-increasing impact of culture.

Whether or not he adjusts quickly, easily, and satisfactorily depends upon his own original endowments, the kind of standards and directives imposed upon him, the methods and situations by which they are brought to bear, and the kind of persons the adults around him are.

The interrelationships between child and parents hold the key to the future for the physically normal child; and the parents themselves are the keepers of the keys. During the past twenty years parent education has advanced rapidly in all quarters of the United States both as an organized movement and as a trend in the rather systematic publication of articles in magazines read by parents—mostly by the mothers. Many thousands of people have eagerly sought on their own initiative information and assistance in preparing for parenthood. There is still much to be done. It does not take a long period of observation in any clinic to see parents come and go who show an appalling lack of understanding of human behavior in the rearing of their children. Indeed, it can be said with certainty that many of them have more symptoms themselves than do the children they bring to the clinic for treatment.

Any consideration of speech development in the individual must take into account other aspects of his behavior and the environmental stresses and strains of which his total behavior is partially a product. All forms of human behavior are associated with language or come to be. The studies of Koffka (**16**), Lewis (**17**), Piaget (**27**) and others show how the child learns speech as a part of his total adjustment pattern. Since speech sounds usually accompany the child's experiences, his learning of speech can be thought of as a conditioned reaction taking place when specific adjustments are made. A child learns speech, then, as a part of the whole process of organizing his behavior and learning to adjust to his environment.

Travis (**44**, 57) states:

> In order to understand the individual's speech, it is necessary not only to understand his speech organs, but his person as a whole. As a matter of fact, the very study of speech itself is justifiable mainly to the extent that it throws light on the significance of the person speaking.

It may be obvious, then, that study, diagnosis and treatment of various speech defects and disorders in children will perforce carry us into the field of personality study and behavior problems. The paramount rôle played by the parents in the early develop-

*This paper is a part of a doctoral dissertation completed at the University of Southern California under the direction of Lee Edward Travis and Louis P. Thorpe. Dr. Wood is Director of the Speech Correction and Hearing Clinic, Univ. of Oregon at Eugene.

ment of the child is no less obvious.

In view of parent-child relationships as a controlling factor in child development, this study poses a question as to what kind of parents speech defective children have.

Definition of Terms

1. *Functional articulatory defects*: Van Riper (**47**), Berry and Eisenson (**6**), and the White House Conference Report in 1931 (**48**) state that approximately 70 per cent of speech defects in children are of the articulatory type; that is, they are characterized by defective utterance of individual speech sounds in connected discourse. Such disability is centered largely on the movements of the mandible, lips, tongue and soft palate. Travis (**45**) lists the causes of such defects as mental deficiency, significant hearing loss, faulty training, structural malformation and idiopathic (cases in which no cause can definitely be assigned). From this etiological classification we can assume a dichotomy of constitutional, or organic, causes and functional causes. Where there is no demonstrable structural or constitutional deficiency involved, the articulatory difficulty is said to be functional. Such defects are manifested by arrest in speech development in which a large number of speech sounds have not been learned, or in which there is substitution of one sound for another, omission of sounds, and interpolation of accessory speech sounds.

2. *Parental maladjustment factors*: The study defines this term as referring to a tendency on the part of a parent toward defective adaptation to environment as well as a tendency for undesirable distinctive behavior patterns or traits. Such tendencies are described in terms of the tests used.

The Problem

THE PURPOSE of this study is, first, to determine whether maladjustment and undesirable traits on the part of parents are significantly associated with the presence of functional articulatory defects in their children; and, secondly to formulate, on the basis of this study, recommendations that could be clinically applied in speech correction.

The specific questions raised by the investigation are:

1. Would a group of parents selected solely on the basis of having children with functional articulatory defects be significantly more maladjusted than a group of unselected parents?

2. What are the traits and adjustment factors observed as determined by the tests?

3. How do the speech defective children compare with their parents with respect to traits and adjustment on the basis of the same type of test?

4. How are the test ratings of parental adjustment supported by case history data?

5. Is there a significant difference in improvement in speech between those cases in which both the child and parents were clinically treated and those in which only the child was treated?

The cases upon which this research is based were obtained from the public schools of Eugene, Oregon, and were studied in the Speech Correction and Hearing Clinic at the University of Oregon in the same city. The investigation is primarily a study of fifty pairs of parents of speech defective children and not basically a study of the fifty children themselves.

In setting up the group to be studied, every effort was made to eliminate those parents whose speech defective children were afflicted with low vitality, speech-related organic deficiency, mental disability, and hearing loss. Those parents who had a speech defect themselves or were mentally deficient were not included. Not included in this study, then, were the parents of any child whose articulatory defect could be partially or wholly explainable by factors not related to imbalance in the home. This places the study in line to deal with the question as to whether or not parental behavior patterns, emotional adjustment, and home conditions to which they lead, could alone be responsible

for disturbances in the child's speech development.

Parents were tested with the Bernreuter Personality Inventory and the California Test of Personality in order to get a picture of their traits and their adjustment. Both the mothers and the fathers were tested. Case history data were obtained for each family in an effort to correlate family relationships and home situations with the results of these tests.

The speech defective children were tested with the Pintner Aspects of Personality Test and the California Test of Personality to see how they compared with their parents. Some of the children were given the Murray Thematic Apperception Test to get an idea of their dominant drives, complexes and personality conflicts. Since such components of the child's personality were assumed to be based on his past experiences, and since these experiences were largely the result of the type of parental handling he had had, it was assumed that the TAT would be useful in validating parental personality as described by other tests and the interview data. This assumption is based on the premise that children are more likely to be mishandled when parents themselves are maladjusted.

Since the study extended over a period of two years, it was possible to observe the results of two different therapeutic approaches used in the clinical treatment of the children with speech defects. Half of the cases were treated with emphasis on the clinical treatment of the parent; the other half were treated without parental conference or counselling. Results of the treatment program were tabulated after a period of ten months to see which group of children made the greater progress. In this clinical portion of the study the two halves were selected on the basis of paired adjustment ratings of the mothers. This study, then, constitutes both diagnostic and remedial research.

Importance of the Study

IN STUDYING the causes of speech defects in children, we are confronted with a complex and multidimensional problem. The whole answer can never be found in one single factor. A study of cases should make the plurality of causal factors a salient principle. The answers depend upon the degree to which each causal factor operates in the speech deviation.

The dichotomous classification of articulatory defects into functional and organic types is questioned by Johnson (**15**) on the basis of the problem involved in setting up criteria for normal function and normal structures. One can only say that such a dichotomy seems natural and logical if it is established in terms of dominant causal factors in any given case. The inability to produce plosive sounds on the part of the cleft-palate child would usually call for the ruling-in of the organic factor as the dominant one, and the case would be called organic. However, we cannot be sure that all operative factors are physiogenic in such cases. Several cleft-palate cases in our clinic exhibited articulatory difficulty which did not appear related to the palatal deficiency at all.

In cases of lesser organic deviation, such as dental malocclusion, the etiological importance of the organic factor is much harder to weigh. In fact, extensive clinical practice would show anyone that we often observe normal speech in persons with poor structures and sub-normal speech from persons with apparently perfect structures.

Carrell (**8**) found no significant differences between his defective speech group and his control group in medical or dental conditions. Fymbo (**13**) in his study of 111 speech defective students found 87 per cent with dental malocclusion; but he found that 62 per cent of his group of average-ability speakers and 35 per cent of his superior speakers also had malocluded teeth.

There must be some factor or factors superimposed on the organic ones which serve to make speech better or worse than it should be if the structural deviations were considered alone. Undoubtedly some children compensate with certain muscle movements to overcome what would have been a lisp or a distorted speech sound. An interesting problem is raised as to just what factors enable one child so to compensate and yet preclude another from so doing.

This study attempts to ferret out some of the less evident causal factors in articulatory disorders after some of the more apparent ones have been eliminated by selection of cases. The importance of the study lies in the belief that if significant relationship can be shown between parental maladjustment and functional articulatory defects in children, it would point to the need for giving more attention to parents in the course of remedial work with the children. Whether or not the alleviation of parental maladjustment problems would speed the process of correcting the child's speech has important implications for clinial practice; but before we can attempt to answer that question, we must first find out if such maladjustment problems are present.

Descriptive Qualifications of Subjects

THE SPEECH defective children were screened from the Eugene Public Schools by the classroom teachers and reported to the principals and school physician as articulatory cases. Such cases were then referred to the Speech Correction and Hearing Clinic at the University of Oregon. As each child was entered, he was given tests of speech ability, hearing, intelligence and personality in the order named. If he presented any speech-related structural defects such as paralysis, malocclusion of the teeth, and other oral deficiences, he was not accepted for this study. If any doubt existed as to his medical status, the child was referred to a pediatrician for examination and confirmatory opinion. After 85 children were examined, we had 50 children who qualified as functional articulatory cases.

This group consisted of 40 boys and 10 girls with an age-range of 5 years-5 months to 14 years-1 month (median 8 years-3 months). The range of intelligence as tested by the Terman-Merrill Revision of the Stanford-Binet, Form L, and the California Test of Mental Maturity (Short Form) was normal. Hearing as tested by the Maico D-5 Audiometer showed no significant loss in any child.

Since the whole study depends on whether or not the speech defective children actually had defects in articulation, special care was exercised in examining their speech. Combinations of the Stinchfield Articulation Test (**36**), the Bryngelson and Glaspey Speech Test (**7**), and the diagnostic picture tests by Stoddard (**37**) were used. Since the Stoddard test was complete enough to use by itself, two articulation tests were given each child, the first with the Stinchfield and Bryngelson and Glaspey cards, and the second with the Stoddard pictures. In all cases the tests were administered by the investigator and a second qualified speech clinician.

From these tests an inventory sheet was constructed on which to record the articulation ability for each child for each sound. There was a total of 70 sounds represented in the inventory, counting each position of one consonant-phoneme as a separate sound. There were 25 phonemes, five of which do not occur in all three positions.

In presenting the cards to the subject four factors were noted on the inventory sheets: normality of the sound, omission, the sound or sounds substituted, and distortion that was difficult to describe. It should be noted that pictures were used in order to

rule out the response of the child as being a matter of repetitive speech. In giving the articulation test to the child every effort was made to get him to engage in propositional speech.

In order to obtain some kind of numerical evaluation of the articulation ability of each child, an 'articulation index,' based on the relative frequency of occurrence of a given sound in children's speech, was devised. In trying to establish the degree of articulation ability or disability, it would be a mistake to give two sounds equal value. For example, [t] accounts for 12 per cent of children's consonant sounds and [zh] for only .06 per cent. The child who could not articulate [t] would be said to have a greater speech handicap than the child who had not yet mastered [zh]. The index used is based on the Travis frequency table showing the relative frequency of occurrence for each consonant sound in three hours of phonetically recorded speech of children (**45**, 223). The actual 'articulation index' was determined by giving a relative weight to each sound and prorating that weight equally to the positions in which the sound occurs. For example, since the relative weight of [f] is 2.4 per cent according to the Travis table, then initial, medial, and final [f] are each given a weight of .8 per cent. If a child is unable to say some of his sounds correctly, the weight values of those sounds are substracted from his total score. His 'articulation index' would be the sum of relative weights of the sounds he misses subtracted from 100. Table 1 lists the sounds used in the inventory together with the weights for each sound in each position.

TABLE 1. Speech-sound inventory and relative values of each sound used in calculating the articulation index.

Sound	*Initial*	*Medial*	*Final*	*Sound*	*Initial*	*Medial*	*Final*
[p]				[zh]			
2.8	.93	.93	.93	.06		.03	.03
[b]				[f]			
2.9	.97	.97	.97	2.4	.8	.8	.8
[m]				[v]			
5.2	1.7	1.7	1.7	2.4	.8	.8	.8
[t]				[th]			
12.0	4.0	4.0	4.0	.9	.3	.3	.3
[d]				[voiced]			
6.3	2.1	2.1	2.1	4.0	1.3	1.3	1.3
[n]				[r]			
10.4	3.5	3.5	3.5	9.3	3.1	3.1	3.1
[k]				[l]			
5.1	1.7	1.7	1.7	6.3	2.1	2.1	2.1
[g]				[y]			
2.9	.9	.9	.9	1.7	.85	.85	
[ng]				[w]			
1.9		.95	.95	4.2	1.4	1.4	1.4
[s]				[wh]			
8.9	3.0	3.0	3.0	.6	.3	.3	
[sh]				[dzh]			
1.3	.4	.4	.4	.7	.3	.3	.3
[ch]				[z]			
.7	.2	.2	.2	4.3	1.4	1.4	1.4
				[h]			
				3.9	2.0	2.0	

TABLE 2. Average articulation ratings by age groups of the speech defective children.

Age	No.	Average No. Defective Sounds	Average Art. Index
5–6 years	7	30.7	59.06
6–7 "	6	34.2	59.16
7–8 "	8	25.1	62.92
8–9 "	8	25.6	66.44
9–10 "	9	21.4	70.30
10–11 "	2	19.5	74.62
11–12 "	4	9.0	85.50
12–13 "	2	5.0	89.30
13–14 "	1	9.0	84.40
14–15 "	3	16.0	72.72
	Total 50	Average 16.5	Average 72.44

Table 2 shows the average articulation ratings of the 50 speech defective children whose parents were included in this study. By breaking down the group according to ages, it will be seen that the younger the child the lower his articulation ability.

The 50 pairs of parents of the speech defective children were normal in intelligence and hearing as tested by the California Test of Mental Maturity and the Maico audiometer. No parent was included in this study who had a speech defect of any kind.

ADMINISTRATION OF PERSONALITY TESTS

THE STANDARDIZED personality tests were administered to the parents prior to their being interviewed at length for case history material, since we did not want to influence their answers to inventory questions by the element of suggestion which is bound to enter into the interview situation.

Parents were first given the Bernreuter Personality Inventory in a group situation and this was followed up one week later by the California Test of Personality. In some cases it was necessary to give the tests individually. In securing the cooperation of parents in taking tests, no appeal was made on the basis of the value of the study, but invariably the following explanation was given to both parents verbally:

1. That our sole aim was to help the child to improve his speech.
2. That we had to know as much about the child as we could learn because his speech was a part of his personality.
3. That we could learn a great deal about the child if the parents would answer 'these questions' as honestly as they possibly could.
4. That we would not charge anything for our work if the parents would agree to cooperate by giving us any information we sought.
5. That all information we obtained would be absolutely confidential.

Then followed a long series of interviews with parents to obtain case history data. In all but one instance it was the mother who was interviewed. None of the personality tests were scored until after the interviews since we did not want a low adjustment score to influence subjective judgments on the part of the examiner as to what was important in the case histories.

While this program was being carried on, the 25 children who qualified in age for the Aspects of Personality Test (Pintner) were given that inventory. The Murray Thematic Apperception Test was given to 29 children.

ESTABLISHMENT OF CLINICAL GROUPS

CLINICAL WORK was begun with each child as soon as he was brought to the clinic. As soon as adjustment scores were obtained for the parents, two groups of children were established on the basis of pairing the

adjustment scores of the mothers. Each group had mothers who ranked approximately the same in adjustment on the basis of the B1-N (Neurotic Tendency) factor in the Bernreuter Test. One group of children received clinical work without the factor of parental counseling, and the other group received treatment supplemented by an intensive program of parent-conferences.

When the two groups of mothers were segregated, the following conference program was carried out with respect to the group of parents of speech defective children in which attention to parental problems was to be emphasized. The aim was to see which group of children made the greater improvement in speech over a ten-months period.

1. The results of the personality tests were explained to the mother and undesirable tendencies and maladjustment signs discussed at length.

2. Each mother was asked to write once each week a running account of a complete day at home. These reports were to describe problems that arose in relation to the children, methods of discipline, emotional outbursts in the family, incidences which brought happiness, etc. The reports would vary for each parent, but the object was to bring information about the home situation to the clinic and to get the parents to examine themselves. Experience teaches that when a person writes down the things he has done and the ways he has felt, it is likely to influence his future courses of action.

3. Problems presented by the parents in reports were discussed and suggestions were made for handling them.

4. Each parent was given copies of two books to read: *The Parents' Manual,* by Anna W. M. Wolf, (**49**), a guide to the emotional development of young children written in non-technical style, and *Personal Problems of Everyday Life,* by Travis and Baruch (**46**), which presents in non-technical style the practical aspects of mental hygiene.

Results of the Investigation

A. Bernreuter Inventory Scores

The scores obtained for 50 mothers of the speech defective children differed significantly from Bernreuter's norms for adult women for all factors except the F2-S scale which measures sociability. The critical ratios for these five factors indicate that the chances are better than 99 in 100 that the true differences between the groups are greater than zero. The results shown in Tables 3 through 8 indicate that the mothers as a group were more neurotic in tendency, more self-sufficient, more introverted, more submissive and more hamperingly self-conscious than the Bernreuter group of adult women.

Table 3. A comparison of scores of mothers of speech defective children with the Bernreuter norms on the B1-N scale.

	N	*Mean*	*S.D*	*S.E. Mean*	*S.E. Dif.*
Mothers'.....	50	+7.92	75.4	10.70	
Bernreuter's.....	377	−27.5	79.2	4.08	11.45
Diff. in Means.....	35.42	(greater neurotic tendency for mothers)			
Critical Ratio.....	3.09				

Table 4. A comparison of scores of mothers of speech defective children with the Bernreuter norms on the B2-S scale.

	N	*Mean*	*S.D*	*S.E. Mean*	*S.E. Dif.*
Mothers'.....	50	+25.3	45.7	8.46	
Bernreuter's.....	367	+ 3.2	56.8	2.43	6.91
Diff. in Means.....	22.1	(greater self-sufficiency for mothers)			
Critical ratio.....	3.19				

Table 9, summarizing the critical ratios obtained for mothers and fathers, respectively, in comparison with Bernreuter's standardization groups, indicates that the group of fathers were not significantly different in any of the Bernreuter traits from the group of men upon which the inventory was standardized, while the group of mothers showed pronounced differences in all but one trait.

In view of the high correlation between the B1-N, B3-I, and F1-C factors, we are perhaps justified in stating that the main finding from the Bernreuter test scores was the indication of a striking tendency on the part of the mothers toward neurotic behavior and practically no such tendency on the part of the fathers.

TABLE 5. A comparison of scores of mothers of speech defective children with the Bernreuter norms on the B3-I scale.

	N	*Mean*	*S.D*	*S.E. Mean*	*S.E. Diff.*
Mothers'	50	+ 2.0	44.2	6.25	
Bernreuter's	126	−15.8	46.6	4.15	7.5
Diff. in Means	17.8	(greater introversion in mothers)			
Critical ratio	2.37				

TABLE 6. A comparison of scores of mothers of speech defective children with the Bernreuter norms on the B4-D scale.

	N	*Mean*	*S.D*	*S.E. Mean*	*S.E. Diff.*
Mothers'	50	−18.4	55.4	7.83	
Bernreuter's	371	+18.4	63.0	3.27	8.49
Diff. in means	36.8	(greater submissiveness for mothers)			
Critical ratio	4.33				

TABLE 7. A comparison of scores of mothers of speech defective children with the Bernreuter norms on the F1-C scale.

	N	*Mean*	*S.D*	*S.E. Mean*	*S.E. Diff.*
Mothers'	50	+37.9	80.9	11.44	
Bernreuter's	848	− 1.0	90.0	3.09	11.85
Diff. in means	38.9	(greater self-consciousness for mothers)			
Critical ratio	3.21				

TABLE 8. A comparison of scores of mothers of speech defective children with the Bernreuter norms on the F2-S scale.

	N	*Mean*	*S.D*	*S.E. Mean*	*S.E. Diff.*
Mothers'	50	−21.1	43.1	6.09	
Bernreuter's	848	−18.8	54.7	1.87	6.37
Diff. in Means	2.3				
Critical ratio	.31	(difference not significent)			

TABLE 9. A comparison of critical ratios obtained for mothers and fathers, respectively, in comparison with Bernreuter's standardization groups, for each Bernreuter inventory trait.

	B1-N	*B2-S*	*B3-I*	*B4-D*	*F1-C*	*F2-S*
Mothers	3.09	3.19	2.37	4.33	3.21	0.31
Fathers	0.37	1.08	1.12	0.24	0.62	1.38

TABLE 10. Percentages of speech defective children having at least one or both parents, scoring high on the B1-N scale (neuroticism).

Bernreuter's Percentile Brackets	*One Parent* %	*Both Parents* %	*Total* %
95-100	16	0	16
90-100	26	2	28
80-100	40	6	46
70-100	54	10	64
60-100	52	20	72
50-100	48	30	78

In breaking down the scores for both mothers and fathers for the B1-N factor in terms of the percentage of speech defective children who had one or both parents rating high in neurotic tendency, we can see how neurotic parents were distributed among the 50 families. According to Table 10, 32 of the speech defective children, or 64 per cent, had at least one parent ranking above the 70th percentile (Bernreuter norms) in neurotic tendency. The point is made that, although the fathers as a group were not neurotic in tendency, some of them did score high in this factor; this is important because neurotic behavior on the part of either parent would tend to disequilibrate the home and interfere with the child's normal development. When the fathers and mothers were combined as a group, there were enough neurotic parents, as defined above, to assign at least one to each of 32 children. Using the 50th Bernreuter percentile for neuroticism as a criterion score, 78 per cent of the speech defective children's parents manifested neuroticism on the test.

B. California Test of Personality Scores

The California Test of Personality scores show the maternal group to be significantly lower in self-adjustment, social adjustment and total adjustment than the group of 250 adults upon whom the test was standardized. Since the median was used as a measure of central tendency, the P. E. of the median computed from the quartile deviation was used in determining significance of the differences. Table 11 shows the critical ratios to be very significant in the direction of greater maladjustment on the part of the maternal group.

Table 12 shows the median scores for fathers on the California Test of Personality to be only 7.5 points below the median for the norms in self-adjustment as contrasted with the maternal group which was 16.0 points below. No significant difference was established in the social adjustment section for fathers; but total adjustment, because of the weight of self-adjustment scores, was low enough to make for a barely significant difference.

TABLE 11. A comparison of scores of mothers of speech defective children and the norms established for the California Test of Personality.

	N	*Mdn*	*Q*	*P.E. Mdn*	*P.E. Dif.*	*D/P.E. Dif.*
SELF-ADJUSTMENT						
Mothers	50	51.0	9.0	1.61		
Norms	250	67.0	8.5	.674	1.74	9.20*
SOCIAL ADJUSTMENT						
Mothers	50	55.5	9.8	1.77		
Norms	250	63.5	9.7	.792	1.94	4.12*
TOTAL ADJUSTMENT						
Mothers	50	110.5	12.3	2.17		
Norms	250	130.0	18.5	1.40	2.58	7.56*

*Greater maladjustment in the mothers.

TABLE 12. A comparison of scores of fathers of speech defective children and the norms established for the California Test of Personality.

	N	*Mdn*	*Q*	*P.E. Mdn*	*P.E. Dif.*	*D/P.E. Dif.*
SELF-ADJUSTMENT						
Fathers	50	60.5	10.0	1.77		
Norms	250	67.0	8.5	.674	1.89	3.96*
SOCIAL ADJUSTMENT						
Fathers	50	62.0	11.5	2.04		
Norms	250	63.5	9.7	.792	2.18	.073
TOTAL ADJUSTMENT						
Fathers	50	123.5	15.8	2.79		
Norms	250	130.0	18.5	1.40	3.12	2.08*

*Greater maladjustment in the fathers.

The comparison of median percentile scores for the three groups, mothers, fathers and children, is shown in Table 13. On the basis of the California Test of Personality the mothers ranked lower in nearly every component than did the fathers or speech defective children. The two exceptions were *social standards* and *social skills.* It is significant that the mothers were so high in these two components because of the implication *that children may be constantly forced toward these high standards in a none-too-healthy way. In many cases the clinical observations bore out the belief that it was these very high social standards that actually brought the mother to the clinic rather than a sincere desire on her part to help the child attain better speech.* In other words, the mother felt a stigma attached to the fact that her child had a disability which other children in her social sphere did not have.

Mothers and fathers both ranked low in *self-reliance, sense of personal freedom, feeling of belonging, freedom from withdrawing tendencies, freedom from nervous symptoms,* and *family relations.* The speech defective children themselves ranked low in *freedom from withdrawing tendencies.* It was surprising that the children did not show a poorer picture of adjustment in view of the kind of parents they had. We can only conclude that maladjusted parents do not necessarily reproduce similar maladjustment components in the child, but that they disequilibrate the child's development in varied ways. The effect of the home setting is partly counterbalanced by influences outside the home, but in our

TABLE 13. Median percentile ranks, based on test norms, in each component for mothers, fathers and speech defective children on the California Test of Personality.

Component	*Median Percentile Ranks*		
	Mothers	*Fathers*	*Children*
SELF-ADJUSTMENT	17.6	30.5	56.5
A. Self-Reliance	20.5	31.8	65.9
B. Sense of Personal Worth	39.4	71.5	59.1
C. Sense of Personal Freedom	22.5	31.5	61.5
D. Feeling of Belonging	38.3	44.8	57.5
E. Withdrawing Tendencies (freedom from)	24.5	36.2	40.5
F. Nervous Symptoms (freedom from)	18.2	24.8	65.5
SOCIAL ADJUSTMENT	33.8	46.1	66.1
A. Social Standards	68.7	48.8	67.4
B. Social Skills	58.5	47.2	49.5
C. Anti-social Tendencies (freedom from)	20.5	37.1	62.7
D. Family Relations	25.5	39.1	55.5
E. Occupational or School Relations	49.1	67.6	63.0
F. Community Relations	30.5	71.9	75.1
TOTAL ADJUSTMENT	26.9	38.0	58.3

speech cases the scars of early psychic injury and interference may remain in the form of functional speech difficulty.

The adjustment scores of the parents become still more meaningful when we view them in terms of the percentage of the 50 children who had a poorly adjusted parent. In some cases it was the father, in some cases the mother, and in other cases it was both. Table 14 shows there were enough poorly adjusted parents to go around for nearly all the 50 children. It depends, of course, as to where the line is drawn between good and poor adjustment. We see that 96 per cent, or 48 of the 50 children had one or both parents ranking below percentile 45 in self-adjustment, while 84 per cent and 86 per cent had parents below percentile 45 in social adjustment and total adjustment, respectively. In the lower percentile brackets these percentages are still sizable.

It can be said that the California Test of Personality confirms the results of the Bernreuter Inventory in that a significant number of mothers were maladjusted and a substantial majority of the speech defective children had parents showing poor adjustment components. The Bernreuter scores for mothers on the sociability scale confirms the California Personality Test scores which indicated high social standards and skills.

C. Aspects of Personality Test Scores

The results of the Pintner Aspects of Personality Test given to the 25 speech defective children who qualified as to age and school grade showed little relationship between the scores for this test and the scores for parents on the corresponding parts of the Bernreuter Inventory. An attempt was made to determine whether the children reflected the same traits as did their parents. Percentile scores for the three 'aspects' of personality on the Pintner test were compared with the comparable Bernreuter scores of the 25 mothers and fathers of the children tested. The children's scores were widely scattered for all three sections of the Pintner test. The results of this test were not considered significant in showing maladjustment among the children.

In determining the correlation between three Pintner 'aspects' and the three corresponding Bernreuter traits, the rank-difference method was used. Since high scores on two of the 'as-

TABLE 14. Percentage of speech defective children having at least one parent and percentage having both parents scoring low on the California Test of Personality.

Percentiles of the Test Norms	*One Parent*	*Both Parents*	*Total*
SELF-ADJUSTMENT			
1-45	36	60	96
1-35	44	42	86
1-25	40	34	74
1-15	30	16	46
1-5	16	2	18
SOCIAL ADJUSTMENT			
1-45	52	32	84
1-35	40	24	64
1-25	38	6	44
1-15	20	2	22
1-5	6	0	6
TOTAL ADJUSTMENT			
1-45	36	50	86
1-35	32	42	74
1-25	40	14	54
1-15	22	2	24
1-5	12	0	12

TABLE 15. Rank-difference correlations between Bernreuter and Pintner percentile scores for parents and children in 25 family cases.

Mother	*R*	*Child*	*Agreement*
B1-N Neurotic Tendency	−.23	III Emotionality	Positive
B3-I Introversion	−.31	I Extroversion-Introversion	Positive
B4-D Dominance	+.41	I Ascendance-Submission	Positive
Father	*R*	*Child*	*Agreement*
B1-N Neurotic Tendency	+.27	III Emotionality	Negative
B3-I Introversion	+.17	II Extroversion-Introversion	Negative
B4-D Dominance	−.08	I Ascendance-Submission	Negative

pects' have a meaning opposite to that of high scores for the Bernreuter corresponding traits, the real direction of agreement is indicated in Table 15 under the heading 'Agreement.' Although all the correlation coefficients are very low, there seems to be some tendency for the child to be like the mother in *emotionality, introversion* and *dominance,* and opposite in these components to the father. In the Aspects of Personality Test we regarded *emotionality, introversion-extroversion* and *ascendance-submission* as downward extensions, with respect to age level, of the Bernreuter traits, B1-N (Neurotic tendency), B3-I (Introversion) and B4-D (Dominance).

D. Thematic Apperception Test Findings

The purpose in giving the Thematic Apperception Test to the speech defective children was to throw more light on the kind of parents they had. We decided to give the TAT to the children instead of the parents because we wished to explore parent-child relationships from the child's point of view. The dynamic contents of the stories were more revealing than direct questions to the children since the children tended, in answering direct questions, to defend their parents. In one case, for example, it was known that the father was frequently intoxicated in the home and had on numerous occasions done physical violence to the mother. It was also known that the child was a frequent witness to these episodes. Yet, when asked by the examiner about his home life, the child refused to divulge any of these facts. The dynamic content of the TAT stories gave a different answer.

In general we wished to see whether parental controls and conduct had been exercised in such a manner as to blight the attitudes of the child. If we could find evidence showing that the needs of the child had not been satisfied, or that his environment had been overly-frustrating, we could probably infer parental neglect and mishandling of the child. This would be relevant to the problem posed by this study.

The administration of the TAT to the speech defective children was full of hazards and difficulties. In only 27 cases were we able to get stories long enough to interpret. Obviously the greater difficulty lay in the fact that our subjects had speech difficulties. The 23 children from whom we were unable to get suitable stories either lacked the aggressiveness and initiative required to make up a theme, or they were unable to comprehend the directions given them in spite of the practice sessions with models and playthings in the age groups below the eight-year level. In two cases we could not understand the speech of the child well enough to get a story. Yet all of these children were found by two

tests to be in the normal intelligence bracket.

The 249 stories related by 27 children about the ten pictures comprising the first series in the TAT averaged 61.4 words per story. In interpreting these stories, some of which contained no more than 45 words, the best that could be done was to look for one dynamic indicator for each story. After this investigator analyzed each story for what seemed to be the salient or dominant dynamism expressed, it was validated by material from the case history interview with the mother. Table 16 shows opposite each dynamism the number of children who expressed it in their stories and the number of children whose case histories substantiated the TAT findings. The following example shows how the case history data supported some of the TAT interpretations:

TAT Picture No. 3: (On the floor against a couch is the huddled form of a boy with head bowed on his arm. Beside him on the floor is a revolver.)

Story Told: "He don't want to go to bed. He's cryin' 'cause his mamma don't come back. Why is he cryin'? (Examiner: 'I want you to tell me why.') 'His mamma made him cry. He have to go to bed and see his mamma in a morning.'

Dynamism: The need for affection and belongingness.

Case History Data: Mother stated in interview that child was not wanted when he came. Father travels and seldom sees the child. Mother would like to travel too, but cannot because of the child and she resents this. She feels that her husband is unfaithful to her, but has no proof. She hates being tied down at home. Would like to find a a girl to take care of the child so she could get away.

The dynamisms and inner drives for which the TAT stories were read are based on a discussion of the basic needs of the child by Travis and Baruch (**46**, 109-114). They include the needs for affection, for belongingness, for achievement, for recognition of achievement; symptoms of desire-frustration, aggression and hostility, withdrawing tendencies, and anxiety-insecurity. Although there are many other variables in TAT interpretation, it was felt that these were the more easily recognizable. We have made no attempt to classify the dynamisms by subdividing frustration, for example; nor have we included any of those on the credit side of the personality ledger since we were interested in the incidence of those showing the impact of unfavorable parental behavior patterns. As a rule not more than one dynamism was evident in each story, and it can be inferred from the figures in Table 16 that the revelations of satisfactory dynamisms were not in the ascendancy.

It will be seen that the three dynamisms found in the stories of most of the children were the need for affection, a sense of frustration and withdrawing tendencies. In regard to

TABLE 16. Number of children expressing unfavorable dynamisms in TAT stories and number of case histories substantiating the interpretation.

Dynamism	*No. of children*	*Substantiations by Case History*
1. Lack of affection	11	8
2. Lack of achievement	5	3
3. Lack of belongingness	6	5
4. Sense of frustration	18	16
5. Aggressiveness and hostility	6	6
6. Escape	4	1
7. Withdrawing tendency	17	10
8. Anxiety-insecurity	10	9
A. No unfavorable dynamism	3	1
B. Children tested	27	
C. Children not tested	23	

the latter, Travis and Baruch (**46**, 178) write:

> Speech retardation is merely one aspect of this whole problem of withdrawal. Speech is in great part a means for contact. When contact brings eventual inner pain, why go after it? Speech is in itself a reaching out toward other people. It is a manner of touching. When counter-touch results in inner writhing, why attempt to get it? Why talk?

A substantial portion of the TAT interpretations were supported by factual items of major importance taken from the case histories, and we may say that all but three of the children tested showed that their parents neglected to give them enough affection; or failed to make it possible for them to achieve satisfactorily; or let them drift into psychological exclusion; or consistently frustrated them with a sort of neurotic domination; or forced them into aggressive and hostile attitudes; or set their environment so that an escape mechanism was necessary for the child; or created enough pain so that the child responded by withdrawing; or kept the environment in such a volatile state that the child grew anxious and insecure without knowing why.

A group of parents who would bring about such a set of attitudes in their children must have been themselves the fountain-heads from which such attitudes ran. Many of these attitudes expressed by the children were introjected from the parent and then projected for us on to the TAT pictures.

E. Observations Based on Case History Data

From the interviews with the 50 mothers, case history data were obtained which brought out rather strikingly the fact that home environment factors in most of the families were conducive to an emotional maladjustment for the speech defective child. While some of these factors which seemed to be salient ones were not directly the result of maladjustment on the part of the parents, it can be said that many of the environmental problems could only be dealt with to the advantage of the child by parents who were well adjusted. For example, defective home membership, listed as one factor in Table 17, would not necessarily in itself have a mal-effect upon the child, but if such a condition were combined with lack of parental understanding and foresight in averting the possible mal-effects, it could have serious repercussions.

From the case material accumulated on the 50 families studied, the following environmental factors were in evidence:

1. *Defective home membership:* Cases in which both mother and father were working; where mother or father had been away from home periodically or continuously over a long period of time; where there were no siblings; where an outsider had been living with the family for a long time; or where the mother and father were separated.

2. *Low educational level of the parents:* Cases in which neither parent had finished at least two years of high school.

3. *Economic instability of the family:* Cases in which the family did not possess the ordinary necessities of life such as a washing machine, radio, adequate living quarters, etc. It was usually possible to ask directly about the income and whether or not bills could be paid; in other cases the economic stability or instability had to be inferred from interview material.

4. *Protracted illness in family during life of speech defective child:* Cases in which any member of the family was ill over a long period of time. In all of these cases it was the mother who attended the patient constantly and at the expense of caring for the child who had the speech defect. In none of the five cases where this factor was present was it the speech defective child who was ill.

5. *Severe child discipline methods:* Cases in which parents exhibited strong negative tendencies with the child in the clinic; where the parents admitted giving whippings, slappings and other physical punishment at least once a week; where 'constant' scolding was admitted by the parents; and where parents stated emphatically that they believed in rigid discipline.

6. *Involuntary parenthood:* Cases in which either parent admitted that the speech defective child was unwanted.

TABLE 17. Salient home environment factors and number of cases in which each was involved.

Factor	No. of Family Cases
1. No recreational outlet for parents	29
2. Parental ignorance of child behavior problems	27
3. Defective home membership	24
4. Severe child discipline methods	22
5. Emotional reaction of parents to child's speech defect	18
6. Economic instability of the family	12
7. Low educational level of one or both parents	10
8. Major incompatibility in marital relationship	10
9. Inequality of affection among siblings by parents	7
10. Involuntary parenthood on the part of either parent	7
11. Protracted illness in family during life of speech defective child	5
12. Transiency of location during life of speech defective child	5
13. Acute family episodes or tragedies during life of speech defective child	5

7. *Transiency of location:* Cases in which the family had changed location an average of once a year over the last six-year period, with all of the attendant upsets and inconveniencies.

8. *Inequality of affection by parents for their children:* Cases in which one parent admitted favoring one child over another or accused the spouse of such favoritism.

9. *Major incompatibility in marital relationship:* Cases in which the mother rated the success of the marriage as 'low' or a 'bad mistake'; where the father drank heavily; or where the mother admitted sexual incompatibility.

10. *Parental ignorance of child behavior problems:* Cases in which parents admitted that they had never read anything on rearing children; or where they showed gross ignorance in their replies to the interviewer concerning simple questions about the child.

11. *Acute episodes or tragedies:* Cases in which there had been deaths, accidents, stillbirths, destruction of the house by fire and other events likely to produce phychic shocks during the life of the speech defective child.

12. *Emotional reaction of the parent to the child's speech defect:* Cases in which either parent had shown irritation over the child's disability; where the parent had made blundering attempts to correct the child; where there had been over-concern or over-indulgence; where the parents seemed greatly distressed and embarrassed about the defect; or where the parents blamed someone else for the appearance of the defect.

13. *No recreational outlet for the parents:* Cases in which the mother had never been away from her children overnight; where she 'never went anywhere' and had no outside interests; and where the mother rarely saw anyone outside the home.

Table 17 lists the foregoing factors and shows the number of families to which each factor can be assigned. From this tabulation it will be seen that 24 homes were defective in membership. Thirteen of these were cases of paternal absence; six were cases in which outsiders were living with the family; and five were cases in which the mother was working outside the home, leaving the child in the care of a hireling.

Twenty-two mothers admitted severe discipline and demonstrated their attitudes and systems in relation to the child by their behavior in the clinic.

Twenty-seven mothers gave evidence of never having read anything concerning the problems of children. In fact, the only publication they had any knowledge of was the bulletin on 'Infant Care' published by the U. S. Department of the Interior and sent out by congressmen to mailing lists compiled from birth notices.

Eighteen mothers reacted emotionally to the speech defects of the child as evidenced by their descriptions of the defects, their accounts of trying to correct them in the home, and their discussions of the fathers' attitude.

It was significant that 29 mothers stated that neither they nor their husbands had any interests outside the

TABLE 18. Distribution of number of factors (listed in Table 17) of home environment among 50 homes of speech defective children.

No. of factors present	*No. of family cases*	*No. of factors present*	*No. of family cases*
7-13	0	2	8
6	2	1	3
5	12	0	0
4	11		
3	14		50

home or any recreational activities. In most cases the mothers had no opportunity to get away from their children. Most of these were the mothers of the younger children.

Table 18 shows how many of these 13 factors were present in each family case. There was 39 families in which at least three of these factors were operating; and there were no families in which all of the factors were absent.

These case history tabulations show the homes of these speech defective children to be poorly ordered, and reflect an inability on the part of the parents to solve their own problems, as well as an inability to offset conditions of natural disadvantage to the child.

F. Effect on Articulation Improvement in the Child When Clinical Treatment of the Parent was Emphasized

If parental maladjustment is significantly associated with functional articulatory defects, as has been indicated, and if such maladjustment is maternally centered, then we might expect to improve the speech of children more rapidly when the mothers are clinically treated at the same time the children are treated. This proved to be the case in this investigation when the 50 mothers were divided into two equal groups, and the only difference in procedure was the treatment of the mothers in one group and not in the other.

Before presenting the results of this comparison, let us briefly describe each group. We shall call the group in which only the children were treated, the Child Therapy Group, and that in which the mothers were treated in addition to the children the Maternal Therapy Group. The two groups were segregated on the basis of paired percentile ratings on the B1-N scale of the Bernreuter inventory. The 25 mothers in one group were approximately equal to the 25 mothers in the other group as to degree of neurotic tendency, and number of mothers in each five-percentile-points bracket.

The children of the mothers in the Child Therapy Group were given speech correction training in the clinic for an average of 1.5 hours per week over a ten-months period. Except for the case history interview and personality tests, contacts with the mother on the part of the investigator were held to a minimum. The children of the Maternal Therapy Group were also given the same amount of treatment over the same period, but in addition a strong program of parental counselling was kept in motion as previously described. None of the clinicians working with the children knew to which group their cases belonged. The purpose was to see which

TABLE 19. A comparison of increases in articulation ability between a group of children treated alone and a group in which mothers were also treated.

	N	*Mean Increase in Art. Index Scores*	*S.D.*	*S.E. Mean*
Child Therapy Group	25	4.29	3.61	.722
Maternal Therapy Group	25	9.64	5.76	1.15
Difference in Means		5.35		
S. E. of Diff.		1.36		
Critical Ratio		3.93		

group of children would make the greater progress in terms of an increase in the articulation index which we described earlier in this paper.

Table 19 shows a significant difference between the mean articulation index increases in favor of the Maternal Therapy Group. The critical ratio of 3.93 indicates that it is practically certain that the difference is not due to chance factors.

Summary

THE PURPOSE of this study was to determine whether parental maladjustment is significantly associated with the origin and development of functional articulatory defects in children and to derive from the findings a basis for clinical recommendations.

For the study a group of 50 pairs of parents was selected who had children with defects of the articulatory type. These defects were not assignable to low mentality, hearing loss, or organic mal-formation. The parents were normal in intelligence, hearing and speech.

The California Test of Personality and the Bernreuter Personality Inventory were given to all 100 parents and the scores were compared statistically with the test norms; the speech defective children were given the California Test of Personality and the Aspects of Personality Test (Pintner, *et al*) to determine whether their adjustment ratings were comparable to those of their parents.

Case history data were obtained from the parents for each family case, and some of the children were given the Murray Thematic Apperception Test in order to tabulate the effects of the salient factors of their home environment.

Finally, two clinical groups were established on the basis of paired neurotic tendency ratings of the mothers; and a program of parental counseling was carried on in one group in addition to treatment of the children. In the other group parental counseling was omitted altogether. Results were treated statistically to determine which group of children made more improvement over a ten-months period.

The results of this study indicate that:

1. Maternal scores on the Bernreuter Inventory differed significantly from the test norms showing that the mothers of speech defective children as a group were more neurotic in tendency, more submissive, and more self-conscious. The scores of the fathers as a group did not differ significantly from the test norms.

2. No correlation was found between the personality test scores of the children and those of their parents.

3. Of the group of 50 speech defective children, 72 per cent had at least one parent above the 60th percentile in neurotic tendency and 64 per cent had at least one parent above the 70th percentile.

4. Maternal scores on the California Test of Personality differed significantly from the test norms, indicating that mothers were lower in self-adjustment, social adjustment, and total adjustment, thus agreeing in direction with the Bernreuter Inventory. Fathers rated significantly lower than the test norms in self-adjustment.

5. Of the group of 50 speech defective children, 86 per cent had one or both parents who were below the 35th percentile in self-adjustment, and 64 per cent had one or both parents who were below the 35th percentile in social adjustment.

6. Social standards of mothers were found to be very high in comparison with other adjustment scores. When this is viewed in relation to the emotional instability of the maternal group, it appears probable that the speech de-

fective children had imposed upon them a set of very high standards in an atmosphere of habitual emotional outbursts on the part of the parents.

7. The speech defective children themselves did not differ significantly from the test norms in either the California Test of Personality or the Aspects of Personality test. As a group they seemed better adjusted than did either the mothers or the fathers.

8. The results of the Thematic Apperception Test administered to approximately half of the children showed dynamisms suggesting a sense of frustration in 66 per cent of the cases, withdrawing tendencies in 65 per cent, and lack of affection in 30 per cent of the cases. Other elements suggested were anxiety-insecurity, lack of belongingness, lack of achievement, aggressiveness and hostility, and escape. Only three of the children tested exhibited no preponderance of unfavorable dynamisms. In most cases the TAT findings were supported by evidence from the case histories.

9. Case history data, obtained for the most part from the mothers, revealed 13 salient factors in home environment which in themselves would militate against a satisfactory emotional life for the child, or would predispose the parent to neglect and mishandle the child. The most frequent factors were lack of recreational outlet for the parents, ignorance of child behavior problems, overly severe child discipline methods and defective home membership.

10. When the mothers themselves were clinically treated for the purpose of alleviating their own problems and securing better adjustment for themselves, their children improved more rapidly under a program of speech correction than did the children of those who were not so treated.

11. Finally, we may say on the basis of this study that functional articulatory defects of children are definitely and significantly associated with maladjustment and undesirable traits on the part of the parents, and that such factors are usually maternally centered.

Discussion

IN VIEW of the fact that mothers have more constant contact with the child, it is probably more significant for our study that mothers are relatively more maladjusted than would be the case if the greater neurotic tendency could be assigned to the group of fathers. It should be remembered, however, that in some cases it was the father who rated high in neuroticism, helping to increase the number of children having a neurotic parent.

The presence of an emotionally immature parent in the family could easily pattern an environment for the child which would militate against normal speech development. A neurotic parent will not discover and apply satisfactory means for handling the child, for the problem of such a parent is not merely adjustment to parenthood, but adjustment of his or her own personality. It is probably futile to instruct a parent on techniques of handling a child if the personality of the parent is not rooted in a healthy organization. Mental hygiene for the child must start with mental hygiene for the parents (**2**). Durkin, Glatzer and Hirsch (**10, 70**) express this point of view in these words:

> On the whole it does not matter what a mother does to her child if her feelings toward her child are healthy, while the mother who does all the acceptable things to her child without really loving him often has a severe problem with the child. What mothers seem to need is not education in the sense of insight and understanding of their child's behavior, but an emotional re-education for themselves so that they may understand their own frustrating patterns which so often affect their relationship with their children.

Speech develops as an activity of the organism in connection with experience, and children will learn to talk only if they have the impulse and desire to talk. As the child develops, he must somehow come to terms with his environment, whatever it may be. In order to meet the demands of a neurotic parent, the child's answer will probably tend to be silence when he should be involved in the vocal play necessary for speech development. It is also conceivable that instead of learning the sounds of speech by listening to them, the child actually learns how not to listen. He will 'turn his ears off' to the threats, scoldings and other discomforting activities manifested by neurotic parents. If the child is to learn speech adequately, and in time, the speech that he hears must be accompanied by a preponderance of pleasant situations and experiences. The time element is imporant too. Many children drop their articulatory deviations eventually while growing up, but not soon enough to be spared the embarrassments and emotional repercussions consequent to their inability to keep abreast of their little fellow travelers. It is probably through a succession of frustrating and emotionally-toned situations in the home that parental neuroticism operates to arrest the development of the child's speech.

In the process of correcting the articulatory defects of the child, the speech therapist is faced with the problem of heightening and focusing the child's attention. The auditory and visual attention so necessary for developing the concepts of speech sounds was in some way interfered with when the child should have been learning speech. His original lack of attention to speech can be considered as his early answer to the pain-bringing speech-associated acts of his parents. If the child is to attend to speech sounds, it must be worth his while most of the time.

Since emotional factors are associated with the etiology of functional articulatory disorders of children, and since they are parentally engendered, it is recommended that speech correction clinics give more attention to a program of educating and treating the parents simultaneously with the treatment of the child. The speech correctionist must become more of a clinical psychologist with an understanding of the use of tests and diagnostic aids as well as a deeply rooted knowledge of the dynamics of total human behavior.

Parental adjustment is not only a prerequisite for normal speech development in the child, but it is a prerequisite for successful treatment of the child in the clinic. The latter would probably hold true for any type of defect the child might have. Parents must be made to realize that the speech difficulties of their children are often the by-product of the kind of parent-child relationship which they themselves have set up, wittingly or unwittingly, and not a condition arising solely, if at all, from acts of the doctor, teacher, neighbor, or other outside agents.

The speech correctionist should look upon parental attitudes and home factors as alterable in the same sense that the speech and attitudes of the child are alterable. The processes involved in altering both should be synchronized. When the child is taken out of the home setting to a boarding school or foster home for treatment, little opportunity is afforded for the re-ordering of parent-child relationships. Failure to accomplish this re-ordering may impede effective clinical practice in the same way that it originally precluded normal speech development in the child.

It is recommended that the parent be dissuaded from trying speech correction procedures with the child in the home, and that instead the mother and father be encouraged to play the

role of a better parent in constructing a happier home where the child will want to listen to what is said and will have a chance to respond to parents he loves.

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FIND A BIGGER AND BETTER PEEPHOLE

It can be said that modern man's energies and interests flow toward a number of centers: family, vocation, avocations, political activity, friends, economic security, recreation, and others. These interests vary with the individual in number and kind and also in the degree of importance attached to each. Everyone has one or more major or focal interests and a number of minor or peripheral ones. It is to be expected that the former will be more meaningful and charged with greater emotion than the latter. The person with a healthy character directs interests into a number of channels. Single-interest persons—those who are excessively preoccupied with one interest to the exclusion or neglect of others—are not adequately adjusted. Such hyperemotivity may be symptomatic of anxiety, insecurity, the need for escape, and similar pathological causes requiring correction.

From *An Introduction to Group Therapy* by S. R. Slavson (New York: Commonwealth, 1943) Pp. 188-189.

News and Announcements

Miriam D. Pauls, Editor*

The week of November 10 to 16 was named 'National Hearing Week' for the purpose of focussing public attention on national hearing problems and on the work of the American Hearing Society and its 120 local chapters. In a recent hearing survey, it was estimated that one out of every ten persons in the nation has a hearing loss and that 3,000,000 of the nation's children have impaired hearing.

The program of the American Hearing Society is threefold: prevention of deafness, conservation of hearing, and rehabilitation of those who are hard of hearing. Dr. C. Stewart Nash, the Society's president, stressed the consideration that a hearing loss in a child has serious social and mental effects which may lessen his chances of making a success in later life. Dr. Nash recommended a vigorous hearing conservation program to be put in effect in the school systems of the nation: periodic hearing tests and medical examinations followed by prompt medical attention if any impairment is discovered.

The formation of Veterans Sounding Posts is being encouraged by the many chapters of the American Hearing Society. These Posts are unaffiliated with any other veteran's organization and are in the main clubs for deafened veterans where they can meet, discuss mutual problems and help each other adjust to civilian life and to living with their disability. Some of the Posts also offer guidance counsellors for their personal problems, vocational counsellors who help them find employment and lip reading classes, voice training and other services which the hard of hearing need.

The following letter from President Truman to Dr. Nash was given wide publicity during National Hearing Week:

'The widespread hearing impairment among the veterans of World War II has brought home to the American people today more than ever the problem of hearing loss.

'We are very fortunate that the American Hearing Society, formerly the American Society for the Hard of Hearing, now celebrating its twenty-seventh anniversary, has labored so tirelessly and successfully with its program of prevention, conservation, alleviation and rehabilitation. Today through the efforts and cooperation of the American Hearing Society great impetus is being given to the extensive program of the Army, Navy and the Veterans' Administration toward a hopeful future for those suffering from impaired hearing.

'The past year has demonstrated the value of your program but it has also emphasized the need for further effort. Aid to the hard of hearing is the immediate concern of a government interested in the improved health of its citizens and the alleviation of human suffering.

'I highly commend your work and program and heartily endorse the observance of National Hearing Week . . .'

The Association for the Study of Negro Life and History has selected the week beginning February 9, 1947, for the celebration of Negro History Week. During this week conferences will be held for the purpose of discussing problems of world peace.

A speech clinic was maintained during July and August in the Quebec Society Camp for Crippled Children located at St. Alphonse de Joliette, Quebec, Canada. The project was sponsored by the Junior Red Cross of Quebec and was arranged by Mary B. Cardozo of the Children's Memorial Hospital, Montreal.

(Continued on Page 302)

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Sex Differences in Relation to Stuttering: Part I.

Hildred Schuell*

I. Introduction

IT HAS BEEN observed that stuttering occurs more frequently among males than among females. This observation, confirmed by speech surveys of various populations, raises questions which have a bearing upon theories concerning the etiology of stuttering, and consequently upon stuttering therapy. It is possible that they may also have a bearing upon theories of education and educational method, as well as other aspects of our culture, to the extent that a relationship between the sex differences in the incidence of stuttering on the one hand, and educationally or culturally determined factors on the other, may be demonstrated.

II. Sex Differences Related To Stuttering

Differences among ratios reported.

Although the more frequent occurrence of stuttering among males than among females is noted in almost every study of the incidence of stuttering, the ratio of male to female stutterers as reported varies. Several factors seem to contribute to this variation. Among these are:

1. Method of survey. (a) Data yielded by questionnaire are supplied by individuals whose knowledge of, and whose definitions of, stuttering differ widely. (b) Data yielded by survey examinations may be influenced by varying survey procedures and criteria of stuttering held by different examiners, and by the ability of some stutterers to escape detection in a short interview.

2. Age of stutterers observed. The ratio of male to female stutterers varies with age level.

3. Selective factors operating in populations studied. (a) In school populations a selective factor operates after the age of compulsory school attendance. (b) In surveys based on stutterers referred for clinical treatment, the data are probably influenced by the severity of stuttering and the degree of maladjustment experienced because of stuttering, since the majority of those who experience only a mild degree of difficulty probably do not seek clinical help. Moreover, socio-economic factors may operate selectively with reference to clinical referrals, in view of the item of expense involved, or general familiarity with available clinical facilities and their significance.

Sex differences in the incidence of stuttering.

The White House Survey (**54**) reported in 1931 is based upon data received from questionnaires from 43 cities in the United States with populations over 10,000. This report shows that 3.8 times as many boys as girls were reported as stutterers in the first 12 grades of the populations surveyed. The ratio became larger with each grade after the first, until the eighth grade was reached, where it may be assumed that a certain proportion of maladjusted children tend to drop out of school.

In Wallin's (**94**) study of speech defectives conducted among 89,057 children of St. Louis, by means of questionnaires sent to school principals, 400 boys and 195 girls were classified as stutterers, or 2.05 times as many boys as girls. Of this number 145 boys and 43 girls were classified

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as severe stutterers, a sex ratio of 3.8 to 1.

In Root's (**78**) survey, conducted among 14,072 pupils in public schools of South Dakota, also by questionnaire, 2.2 times as many boys as girls were reported as stutterers. Root also found boys with speech defects to be more retarded in school than girls with speech defects.

Mills (**66**) reports a speech survey in Holyoke, Massachusetts, in which ten trained examiners tested all the children in the first three grades, and all children reported by teachers to have any speech defect in the fourth, fifth, and sixth grades. In the first three grades 27 boys and 5 girls were found who stuttered, a ratio of 5.4 to 1. Above the third grade 31 stutterers were found among the boys and six among the girls, a ratio of more than five to one. In the first three grades two-thirds of all cases of speech defects were found among the boys, and two-thirds of all serious cases found were boys. Above the third grade three-fourths of all cases of speech defects were found among the boys, and three-fourths of all serious cases found were boys.

A study by Milisen and Johnson (**65**) conducted as a questionnaire survey of 8,000 school children in Council Bluffs, Iowa, and followed by personal interviews and case histories of stutterers, indicated the ratio of boys to girls to be three to one. Among the former stutterers discovered the ratio of boys to girls was two to one. However, as the authors pointed out, there were 145 male stutterers to begin with, of which 58 were reported to have 'outgrown' stuttering, while there were only 56 females altogether, 27 of whom no longer stuttered. Viewed in relation to total numbers of stutterers and former stutterers, then, there were approximately four males to five females in the latter group, which finding appears to be particularly significant in that it reverses the usual relationship.

The Iowa Remedial Education Demonstration Survey (**30**), conducted in five counties in Iowa between 1939 and 1942, discovered 126 stutterers among 22,976 school children. Stuttering was determined by means of a speech examination and teacher corroboration; that is, no child was labelled a stutterer as a result of the examination, unless he had previously been considered to be one. There were 2.8 times as many males as females in the stuttering group.

The files of the Speech Clinic at the State University of Iowa, as of August, 1945, contained the records of 1,243 inidviduals who had been referred as stutterers. Of the total group 1,030 were males, and 213 were females, a ratio of 4.8 to 1. From the analysis of the records shown in Table 1, it is evident that in this sample the ratio of male to female stutterers rises steadily with age, at least until adulthood is reached.

The ratio of male to female stutterers was found to be higher in the university group than in the non-university group of the same age levels, as is shown in the same table. This finding cannot be explained entirely in terms of selective factors operating educationally, since statistical tables published in the annual catalogues of the university for the period over which the clinical records extend show the ratio of male to female students to have been only 1.45 to 1. However, it is still possible to postulate a selective factor, namely, that male stutterers may be more highly motivated than female stutterers to acquire a university education, in spite of the handicap presented by stuttering. This higher motivation, which may be attributed in part to greater pressure toward preparing for the future in a vocational sense, may also partially explain the finding that more males than females at the same age level, who are not university students, seek clinical help. On the other hand, the pressure exerted on the male toward preparing

himself for or establishing himself in some field of work by means of which he may become self-sustaining, may tend to increase the incidence and severity of stuttering in this group. If this view is taken, however, it is still necessary to explain the higher sex ratio in the university than in the non-university group.

It may be that males are more prone than females to react with hesitation and tensions in situations in which a premium is set upon fluency, as it seems to be in many classrooms, discussion groups, and extra-curricular activities. The male student may be more prone than the female to evaluate himself in terms of his ability to compete with other students in such situations, which may accentuate fears and anxieties regarding speech. It seems possible at least that girls evaluate themselves less often in these terms, and are accordingly less likely than men to entertain fears and anxieties in regard to their speech. It is not likely, of course, and this is borne out by the clinic records, that any appreciable number begin to stutter while in attendance at the university.

Nelson *et al* (**70**) studied the incidence of stuttering among 200 pairs of twins, 69 monozygotic (identical or one-egg) and 131 dizygotic (fraternal, or two-egg) pairs. In the monozygotic group both twins were found to stutter in nine out of ten pairs where stuttering occurred. Eleven male and eight female stutterers comprised this group. The fact that the sex ratio is more even than that found in other populations would seem to be an indication that a new factor is operating, which Nelson considers to be hereditary. It is possible to question, however, whether or not, when the children are alike in other respects, parents do not tend to expect that their speech behavior will be alike, and to make similar observations and evaluations, and hold similar attitudes

TABLE 1. Stutterers whose records were in the files of the University of Iowa Speech Clinic, as of August, 1945, according to age and sex, and university or non-university status.

Age	*Male*	*Female*	*Ratio: male to female*
2 to 5	79	26	3.0 to 1
6 to 10	146	34	4.2 to 1
11 to 16	223	48	4.6 to 1
17 to 21	292	56	5.2 to 1
22 to 30	166	19	5.5 to 1
Over 31	57	23	2.4 to 1
Unclassified	67	7	
Total	1030	213	4.8 to 1
	University Status		
17 to 21	178	24	7.4 to 1
22 to 30	90	9	10.0 to 1
Above 31	20	9	3.3 to 1
Total	298	42	7.0 to 1
	Non-university Status		
17 to 21	114	32	3.7 to 1
22 to 30	76	10	7.6 to 1
Above 31	27	14	1.9 to 1
Total	217	56	3.8 to 1

toward it. It is interesting to note in this connection that Davis (**25**), studying 83 pairs of twins, found parental attitudes toward twins of the same sex to be worthy of comment. She observed a certain 'sentimentality' concerning them to be prevalent, expressed in a tendency to keep them out of school at the same time, and to refuse to allow them to be separated in school, even when this was recommended for the social development of the children.

Among the dizygotic pairs in Nelson's study, only one of the twins was found to stutter in 28 out of 30 pairs where stuttering was reported. Among dizygotic twins of the same sex 10 male and 6 female stutterers were found; among those of opposite sex there were 11 boys and 5 girls. A hypothesis which has not been tested in any study known to the author, and which would seem of some significance in relation to studies to be considered later, is that among dizygotic twins the twin who stutters may more frequently be found to be the one who is physiologically less ma-

ture, and that, if this hypothesis is valid, a contributing factor may be the pressure placed upon this child to keep pace with the other one.

In the next section of this study relevant sex differences in other areas will be examined with a view to the light they might throw on the sex ratio with respect to stuttering, and so, indirectly, upon theories of stuttering. To this end consideration will be given to sex differences in relation to mortality and disease, physical growth, language development, intelligence and school achievement, behavior, social adjustments, delinquency, and predelinquency.

III. Sex Differences in Mortality and Disease

Live births and still births.

Potter (**72**) reports that while the ratio of male to female births in all live births is 1,052 males to 1,000 females, the ratio of still-births is 1,303 males to 1,000 females. Still-born fetuses delivered early in pregnancy are more commonly male than female. Seventy-eight per cent of those delivered before the fourth month are male; the percentage decreases somewhat in the later months. Nobecourt (**71**), in a study of infant mortality in France, reports that of 100 still-born infants 58 per cent were male and 42 per cent female. Woodbury (**101**) reports slightly more males than females to be prematurely born, and the death rate at birth to be 106 males to 100 females.

Mortality rates.

Bakwin (**5**) reports that the sex ratio in mortality is highest at birth and in general tends to decrease with age. He attributes this to a decrease in susceptibility of the male, and not to the presence of any conditions in infancy, and their absence later, conducive to high mortality sex ratios.

During the first year of life, the sex difference in mortality is 54.4 male deaths compared to 41.2 female deaths per 1,000, according to the figures of the 1940 federal census (**54**). Nobecourt (**71**), reporting statistics for all France from 1925 to 1927, found 56.5 per cent of deaths during the first year of life to be male, and 43.4 per cent to be female. Bakwin (**5**) reports from 130 to 134 male to 100 female deaths during the first year of life. The 1940 census (**54**) reports a death rate (number of deaths per 1,000 population of specific group) of 2.3 for males and 1.9 for females between one and four years; and of 1.1 for males and 0.8 for females between the ages of five and fourteen. Falk, Rorem, and Ring (**31**) report that male mortality exceeds female mortality by more than 20 per cent from birth until the fifteenth year of life.

The causes of death during the first year of life which show the largest sex difference are, according to Bakwin (**5**), intestinal obstructions, birth injuries, convulsions, meningitis (non-tubercular), congenital debility, diphtheria, pneumonia, and malformations. For only one cause, among the eighteen listed by Bakwin, pertussis, is the death rate higher for girls than for boys.

For all ages the 1940 Federal Census (**54**) shows the greatest sex difference in the excess of male over female deaths for the following causes: heart diseases, tuberculosis, pneumonia, cancer of the digestive tracts and peritoneum, nephritis, cirrhosis of the liver, and ulcers of the stomach and duodenum. It also shows more deaths for males from violent causes, homocides, accidents, and more than three times as many suicides among males as among females. Females, on the other hand, show a higher death rate than males for cancer of the breast and other malignant tumors, diabetes mellitus, exothalmic goiter, pellagra, intracranial lesions of vascular origin, whooping cough and senility.

According to the statistics of the Metropolitan Life Insurance Company (**63**) five times as many men as women die from ulcers of the stomach; 11 per cent more males than females from cerebral hemmorhage; 60 per cent more from arteriosclerosis; 2.5 times as many males as females from diseases of the coronary arteries and angina pectoris; and there are more male than female deaths from organic heart diseases. They report a higher percentage of female deaths for pernicious anemia, as well as the other causes listed by the 1940 census.

IV. Sex Differences in Physical Growth

ON THE AVERAGE, male infants are slightly larger and tend to weigh slightly more than female infants at birth. This difference in average persists throughout life, except for a period between 11 and 14 years, when the sex difference is reversed by the earlier adolescent acceleration of the girls (**62**). In general boys' averages are slightly higher than those of girls for width of shoulder, circumference of chest, length of leg, and girth of arm, while girls tend to exceed boys in thigh circumference (**62**).

Although boys tend to exceed girls at most ages in weight and height, girls exceed boys in rate of bone development, in eruption of permanent teeth, in the appearance of adolescent acceleration, and in measures which indicate relationships with adult proportions.

Wallis (**95**) reports that between two and eight, the stage of ossification of girls, as measured by the relationship of the epiphysis and diaphysis, expressed as the radial index, was from 8 to 10 per cent ahead of the boys. Studies by Adair and Scammons (**2**), Dunham, Jenss, and Christie (**29**), and Baldwin, Busby, and Garside (**8**), based on roentgenograms of boys and girls from birth to maturity, tend to show that at all ages and for all measures except cranial diameter and length of long bones, girls are ahead of boys in the extent of ossification. Sawtell (**82**) concluded, however, that even in the measures in which males exceeded females the superiority of the male was less marked in early childhood than in adult years.

Meredith (**61**) reports that although girls tend to exceed boys in the eruption of permanent teeth (and this is well established), boys tend to be slightly ahead of girls in the eruption of deciduous teeth. Bean (**10**) found that girls had a greater number of permanent teeth than boys at every age, and that the difference was greatest between eight and fifteen. His findings, in general, are confirmed by Wallis (**95**) and others.

Meredith (**60**) reports that the adolescent spurt in height tends to begin at a mean age of 10.5 years for girls and 13 years for boys, and that the acceleration in height, weight, and girth of chest and shoulders reaches its maximum at a mean age of 12 for girls and 14.5 for boys. The earlier period of acceleration for girls is reported also by Burke (**16**), Baldwin (**6**) and others.

Meredith and Knott (**62**), using the skelic index—a leg length to stem length ratio, defined as the length of the lower extremities multiplied by 100 and divided by stem length—as a measure of changes in body proportions during infancy and the preschool years, reported the following sex differences, based on 4,200 paired measurements for 1,100 infants and preschool children:

1. At no age between three months and six years did the mean skelic index for males exceed that for females.

2. The mean index for females tended to exceed that for males throughout, but it was clearly and consistently higher than that for males from six months to four years and six months.

3. An examination of stature and leg measurements obtained from the University of Iowa elementary and high school pupils, by the anthropometric staff of the Iowa Child Welfare Research Station, and analyzed by the same techniques, showed the female index to exceed the male index until 11 years of age. The male index exceeded the female index between 12 and 18 years, as it does in adulthood.

Burk (**16**), using measurements of height and weight obtained at regular intervals, and each new compared with the last measure obtained, found that at six years girls had reached a stage in their development which was noticeably in advance of boys, and that they maintained this lead until 17, when the measures were discontinued.

Baldwin (**7**), also using measures of height and weight, found girls to be more mature than boys at every age, meaning that they were farther along toward their adult status. He reported, in addition, that girls reached their final height earlier than boys.

V. Sex Differences in the Development of Language

Development of speech sounds.

Irwin and Chen (**45**) studying the phonemic types appearing in the vocalizations of 95 infants between 1 and 30 months of age, found that although boys tended to vocalize slightly more than girls, girls used more different sounds. The rate of development was more accelerated for girls than for boys after the first year, and the magnitude of the difference in favor of the girls tended to increase with age. Wellman, Case, Mengert, and Bradbury (**96**), studying the speech sounds of 204 children between the ages of two and six years, found that girls were in advance of boys in the correct use of consonant elements. Girls at three showed as high a mean score (defined in terms of number of correct sounds) as boys at four, and girls at four almost as high a mean score as boys at five.

Age of beginning of conventional speech.

Mead (**59**), Apt, Adler and Bartelme (**1**), and Bateman (**9**), in studies of various populations, concur in reporting that girls are slightly ahead of boys in the age at which they begin to use meaningful words. Such reports, derived from retrospective reports of parents, are, of course, subject to error, but the fact that the direction of the sex difference remains consistent from study to study is probably of some significance. Smith (**85**) made observations of 273 children between the ages of eight months and six years. She constructed a special test, based on 77 vocabularies of children. She found that girls had acquired more words than boys at two and at three, but after that no difference was found.

Further indices of language development.

McCarthy (**56**), from observations made of 20 children at each of the ages of 18, 24, 36, 39, 42, 48, and 54 months, for each of whom 50 consecutive verbal responses were recorded, elicited by means of a set of toys and pictures, reported the following sex differences:

1. The mean percentage of comprehensible responses was higher for girls than for boys at each age level, except 30 months, where the discrepancy was attributed to sampling. At 18 months 38 per cent of the speech of the girls was comprehensible, compared with 14 per cent of the speech of the boys; at 24 months 78 per cent of the girls' speech and 49 per cent of the boys' speech was comprehensible; at 30 months the boys surpassed the girls with 93 per cent of their responses comprehensible, compared with 86 per cent for the girls; at 36 months girls took the lead again with 99.3 per cent of their responses com-

prehensible, while the boys had dropped to 88 per cent; at 48 months the mean for the boys was 99.3, and that for the girls 99.8; at 54 months 100 per cent of the girls' responses were comprehensible, while the mean perecentage of comprehensible responses for the boys was 99.6.

2. The mean length of response showed a small but inconsistent difference in favor of the girls. The sex difference in favor of the girls held when boys and girls were grouped according to mental age.

3. Girls were superior throughout all age levels in the amount of 'adapted information' (which constitutes 50 per cent of the speech of older children), although boys tended to equal them at older levels.

4. Emotionally toned responses tended to decrease with chronological age. Girls exhibited only about half as many such responses as boys at 18 months. The sex difference persisted, but became smaller with increased age.

5. Girls showed a clear superiority over boys in the development and complexity of sentence forms used.

6. The mean number of words used by girls in the obtained responses was greatly in excess of the number used by boys, although it was less marked at higher ages. Girls also exceeded boys in the mean number of different words used.

7. Girls anticipated boys throughout in the use of various parts of speech.

Young (**104**), recording six hours of language observation for each of 74 subjects ranging in age from 30 to 65 months, and pairing 'relief' subjects from lower socio-economic levels with 'regular' subjects from better homes, reported that in both groups girls tended to surpass boys in length of response, amount of comprehensible speech, and use of parts of speech. The children in the regular groups tended to surpass those in relief groups.

In a second analysis of the records of the same group, Young (**105**) found that boys used more exclamatory words and syllables, and more non-exclamatory syllables (vocalizations, not words, usually accompanying play; sometimes, but not always imitative of animals, trains, automobiles, etc.) than girls, and that regular boys used more of these forms than relief boys, and regular girls more than relief girls. A logical explanation would seem to be that children in the regular groups, who had presumably received more language stimulation, vocalized more than children in relief groups, but that, as was indicated in the previous study, girls were using a larger percentage of more complex language forms; they were, also, significantly superior in the number of words spoken. Young also found that the children under three years of age laughed more than the others, that boys laughed more than girls, and that boys in the regular group surpassed all others in this respect. Boys cried twice as much as girls, and relief boys had the highest incidence of crying, suggesting that this group was the most immature and the least adequate in play situations.

Fisher's (**33**) study of the language of 72 nursery school children, based on nine hours of observation for each child, confirms the findings of Young, McCarthy, and Smith. Her subjects ranged from 18 to 60 months in age, and were from upper occupational levels. She reported that the amount of non-verbal (incomprehensible) speech decreased rapidly up to the fourth year, and then remained constant, but that boys tended to use more incomprehensible speech throughout than girls. The proportion of exact repetition in total speech decreased rapidly, but boys tended to repeat identical speech patterns more than girls. (This was defined as the exact repetition of

any remark, whether of a non-verbal sound, a word, a phrase, or a sentence.) Girls used more complete sentences, and more complex sentences at all levels. Girls used plural personal pronouns earlier than boys, indicating greater social development.

Edith Davis (**26**), in a study of language usage errors of 436 children between the ages of 5.5 and 9.5, found that boys made more syntactical errors than girls.

Dorothy Davis (**23**), in a study of repetitions in the speech of children from 24 to 62 months, found repetitions to be part of the speech patterns of all the children. Types of repetitions observed, in order of decreasing frequency, were phrase, word, and syllable repetition. There was a tendency toward a sex difference, particularly for syllable repetition, boys showing more repetition than girls. There was a decrease in the total amount of repetition with age, ranging from a median of 41 instances of repetition per 1,000 words for the girls in the 24 to 35 months old group, to 26 instances per 1,000 words in the 50 to 60 months old group; and from 63 instances of repetition per 1,000 words for the boys in the 24 to 35 months old group to 42 instances per 1,000 words for the boys in the 50 to 60 months old group. The over-all average for the girls was 34 instances per 1,000 words, and for the boys the average was 45.

In a second study (**24**), Davis found that repetitions were not significantly related to language maturity as defined by verbal output, mental age, mean length of response, vocabulary test score, number of correct speech sounds, percentage of responses which were intelligible, incidence of complete responses, and proportions of simple and complex responses. Davis was also able to rank the situations in which these repetitions occurred. It is a matter of obvious significance, if these repetitions tend to occur, as this study suggests—and as is indicated also in Johnson's (**48**) study of the onset and development of stuttering—in relation to the type of situation, and the type of speaking rather than—or as well as—in relation to some physiological or developmental factor.

Speech defects.

Studies by Roe and Milisen (**77**), Dawson (**27**), Collins (**20**), and data from the White House Conference (**54**) indicate that boys make more articulatory errors than girls. The Holyoke survey (**66**) showed that in the first three grades 46.1 per cent of the boys compared with 28.1 per cent of the girls made articulatory errors. Above the third grade such errors were made by 28.3 per cent of the boys, and 12.2 per cent of the girls. Becky (**11**) reports a tendency for boys to outnumber girls in cases of speech retardation. Worster-Drought and Allen (**103**), reporting cases described in the literature for a period which covers approximately 60 years, of a specific congenital language disability in children, found that among the 36 cases where a reference was made to sex, 30 were male and 6 female.

University of Iowa Speech Clinic data.

Of the 1,107 cases of functional articulatory defect (not including foreign dialects, speech retardation, or speech defects associated with hearing deficiency) found in the files of the State University of Iowa Speech Clinic, as of August, 1945, 810 were males, and 207 females, a sex ratio of 3.9 to 1. In the group under five years of age there were 2.7 times as many boys as girls; between six and ten the ratio was 2.3 to 1; and between 11 and 15, 1.4 to 1. In the group between 16 and 21, which included university students, the sex ratio rose to 3.9 to 1, and in the group of individuals 22 years or above, to 4.9 to 1.

Although in the group between the ages of 16 and 21 there was no difference in the sex ratio between the university students and those who were not university students, in the group of individuals 22 years old or above, the sex ratio for the university students was 4 to 1, and for the non-university group, 3.2 to 1. Selective factors are evident here. There is perhaps a greater tendency for the girl with defective speech to be sheltered in the home and not sent to college or referred to a speech clinic. The non-university group has probably been narrowed down to severe cases who feel the need for clinical help to make vocational and social adjustments. There may be a larger proportion of males than females in the group of individuals with severe and persisting speech defects; a larger proportion of males than females may find it urgent to improve their speech in order to make vocational adjustments; or both factors may be operating.

Of the 207 children who had been referred to the Iowa Speech Clinic, as of August, 1945, for retarded speech, 135 were male, and 72 female, which is a sex ratio of 1.8 to 1. In the group under six years the ratio was 1.6 to 1; between seven and ten it rose to 2.0 to 1; and in the group above 11 years, to 3.3 to 1.

Reading difficulties.

A survey of clinical services for poor readers by Kopel and Geerded (**50**) indicates that among clinics reporting the number of boys and girls separately, boys comprised 78 per cent of all cases referred.

Monroe (**67**) reported on 415 children with reading difficulty, 215 of whom were referred to the Institute for Juvenile Research in Chicago for problems other than reading; 135 of whom were referred only for reading difficulty; and 45 children from special rooms or schools for mentally defective or borderline children. Of the general clinic cases who were found to have reading disabilities, 84 per cent were boys and 16 per cent girls; of the cases referred for reading disabilities alone, 86 per cent were boys and 14 per cent girls; of the mentally retarded group, 94 per cent were boys, and 6 per cent were girls. The sex difference in all cases was greater than that for all Institute of Juvenile Research cases, of whom 62 per cent were boys and 38 per cent girls.

Records were available for 85 cases of reading disability who had been referred to the University of Iowa Reading Clinic, as of August, 1945. Of these 71, or 83 per cent were boys, and 14, or 17 per cent were girls.

Wilson (**100**) investigated sex differences in beginning reading from kindergarten through the third grade. He found that boys made more errors than girls in reversing letters, in reversing words, and made more oral reading errors at every level. In the first grade the differences were small, but in the second grade girls surpassed boys on every one of the 14 tests, and the chances were 80 in 100 that the girls were superior in reading. In the third grade girls surpassed boys in mental ability but showed no clear superiority in reading. Wilson ascribed the superiority of the girls to interest in learning and disposition, and to greater physiological and social maturity.

Samuels (**81**) reports a study of all the English-speaking entrants to the first grade in the public schools of Phoenix, Arizona, in 1939. Informal reading readiness tests, the Kuhlman Anderson Intelligence Test, the Monroe Aptitude Test, and, at the end of the year, the Gates Primary Reading Test I were given to 216 boys and 237 girls. A comparison was then made of 100 boys paired with 100 girls on the basis of mental age. In five of the six measures girls were superior to boys to a statistically significant degree. More girls excelled in their pairs on the reading test, and

their degree of superiority was higher on an absolute basis than that of the boys who excelled in their pairs. The difference between the mean score of the girls and that of the boys was statistically significant.

Donnelly (**28**) tested individually 239 children in the first grades of seven schools in Newton and Belmont, Massachusetts, for word recognition skills. Tests were administered at the end of the third, the sixth, and the ninth months of the school year, in order to detect growth. Girls were found to be superior to boys at each of the three testing periods. The difference in means was 2.16 words at the end of the third month of the school year; 12.9 words at the end of the sixth month, and 13.3 words at the end of the ninth month. It was not believed that this difference could be explained in terms of mental ability. Kuhlman Anderson intelligence scores available for 110 girls and 128 boys showed a median mental age of seven years and seven months for the girls and seven years and six months for the boys.

Pyle (**73, 74**) reports a measure of reading span, defined as the number of words which could be grasped and immediately repeated after a three-second exposure of material, given individually to 3,431 children, which constituted all the children then enrolled in three Detroit elementary schools. Girls were found to have longer reading spans in every age group from six to thirteen years. At fourteen the boys excelled, which the author explained by the hypothesis that many of the brighter girls had gone on to other rooms.

Stroud and Lindquist (**90**) reporting on 26 random samples of children drawn from the Iowa Every-Pupil testing program, reported that from the third grade through the eighth girls were superior to boys in reading comprehension, as measured by the Iowa Reading Comprehension Test, Part I. In high school groups a small difference favored the boys. Moore (**68**) and Traxler (**93**) found no sex difference between high school pupils in scores based on the Iowa Silent Reading Test.

Allied language disabilities.

In a study of writing reversals in the first six grades, Smith (**86**) analyzed spelling workbooks and papers and number papers for 154 unselected children in the University Elementary School, Iowa City, for total errors, reversal errors involving letter transposition, and intrinsic reversal errors involving reversals of individual letter forms. For total reversals the difference between boys and girls was not statistically significant. Boys made a greater number of total errors. Smith found a relatively high correlation between reversal and non-reversal errors; that reversals of specific letter forms were relatively inconsistent; and that the number of reversals decreased at higher grade levels.

MacMeeken (**58**) administered the 1937 Revision of the Stanford-Binet Scale, the Drever Collins Scale of Performance Tests, and Burt's Tests of Educational Attainment to children in the 'retarded register' of city primary schools selected to provide a representative population, in order to detect the influence of factors other than low intelligence on educational retardation. Of the retarded boys, 58.4 per cent were found to be of average intelligence, compared with 26.8 per cent of the retarded girls, which difference was statistically significant. However, in spite of superior intelligence, the boys were found to be working at a significantly lower level of accomplishment than the girls, as indicated by reading and spelling attainment scores. Nine out of ten of the individuals of average or above average intelligence working below capacity were boys.

VI. Sex Differences in Mental Growth and School Achievement

Sex differences in mental traits of young children.

Goodenough (**36**) has reported measures obtained from 300 preschool children between 18 and 54 months of age, on the Kuhlman Revision of the Binet Tests, and the Wallen Pegboards, Series A. Her subjects were divided into three age groups, each group consisting of 50 boys and 50 girls, selected to constitute a representative sample of the city of Minneapolis by matching distributions of parental occupations within each group against the corresponding distribution for adult males in the city as a whole, as reported by the 1940 census. All children were given the tests a second time after an average interval of six weeks. Girls obtained higher mean scores on the Kuhlman-Binet, at two, three, and four years, and gained more points than the boys from practice, as shown by the second test. The difference in favor of the girls increased with age. On the first examination, mean intelligence quotients obtained were as follows: at two years, boys 104.3, girls 105.9; at three years, boys 100.7, girls 108.1; and at four years, boys 104.7, girls 114.1. For the first test the mean I.Q. for all boys was 105.8, and for the girls 109.4. On the retest the mean for the boys was 107.7, and for the girls, 113.8. Of the 39 tests girls excelled on 30, boys on three, and six showed no sex difference. In general girls excelled on tests depending upon immediate memory and linguistic ability; boys excelled on imitation of movements, on selecting the longer of two lines, and discriminating between right and left, none of which required a verbal response. The tests in which no differences between boys and girls were found were, for the most part, ones in which the verbal element was small. On the Wallen Peg Boards boys exceeded girls in total score at two and three years, but at four girls were slightly in the lead.

Gesell (**35**), reporting results of examinations of young children at the Yale Clinic of Child Development, found that girls tended to excel boys at five; in analyzing pictures at six; they counted higher than boys and with fewer errors; they dressed themselves better and earlier than boys; they excelled in copying a circle at all ages; in naming picture cards and in language development. Boys tended to excel girls at five and six years in naming parts of the body, in telling own sex, in weight discrimination, and in throwing. On completing a drawing of a man girls added more detail at all ages; in spontaneous drawing, their drawings showed more detail, but those of the boys showed more action and a wider variety of subjects.

Stutsman (**91**) reported higher medial percentile ranks for total scores for girls than for boys between two and five years on the Palmer Merrill Test Scales, a battery containing both verbal and performance items. Five hundred and seventy-one children were tested.

The superiority of girls over boys in the kind of intellectual ability measured by the Stanford-Binet is confirmed by Johnson (**47**) and by Cuneo and Terman (**22**).

Sex differences in mental measurements of school children.

Extensive studies by Burt (**17**), Whipple (**97**), Altmaier (**4**), and Baldwin (**7**) show that on tests which have a verbal element, such as the Stanford-Binet, and the National Intelligence Test, girls tend to excel boys, in general, from the age of school entrance through adolesence. Sex differences favoring girls are most marked in samples which include all children of a given age regardless of grade status. Samples based on grade distributions are not adequate means of determining sex differences, since

more boys than girls of a given chronological age tend to be retained in lower grades, to be placed in special rooms, or, at the age-limit of compulsory school attendance, to drop out of school. Burt (**17**), from measures of 3,510 London school children, obtained on a revision of the Simon-Binet Tests, found the maximum superiority of the girls to be between the ages of six and seven. He found the sex difference reversed, in favor of the boys, at ten. This finding was probably a function of the tests used, since it did not appear at any other level; accordingly measures obtained on ten year olds should be evaluated in relation to this finding. Baldwin (**7**) found that at adolesence girls were about a year ahead of boys in mental development.

Sex differences in educational achievement.

St. John (**79, 80**) compared teachers' marks given over a four-year period by 180 different teachers in 16 different schools in a Boston suburb, with the results of achievement and intelligence tests for 500 boys and 450 girls in grades one to six. Tests used were the Burgess Picture Supplement and Haggerty Sigma I for reading; the Peet Dearborn Test for arithmetic; the Stanford Revision of the Binet-Simon Scale, Dearborn A and C, Otis Primary A, and in a few cases the Myer Mental Measure, for intelligence. Intelligence quotients used for each pupil were based on I.Q.'s recorded over the four-year period. The median I.Q. obtained for the boys was 97.5, and for the girls, 98.2. Among the findings were the following:

1. Girls maintained a superiority of approximately seven per cent over boys in promotions and grade-status.

2. Girls excelled boys in achievement as measured both by teachers' marks and standard tests at all intelligence levels. Superiority was greater as measured by teachers' marks.

3. Correlations of I.Q.'s with achievement criteria were higher for girls than for boys.

4. The superiority of the girls was greater in marks in conduct and effort than in any other phase of achievement.

Woods (**102**) and Stroud and Lindquist (**90**) report results obtained from sampling data derived from the Iowa Every-Pupil Tests of basic skills in the first six grades. Tests were given on a state-wide basis and under standard conditions. It is to be noted, however, that in these studies comparisons were made by grade, and not by chronological age. Woods found that the only skill in which a sex difference was found which favored the boys was in arithmetic, and the difference here was slight compared to differences which favored the girls in other skills. The largest difference found was that which favored the girls in language skills, which ranged from three to fifteen times as large as the difference found for any other skill. Stroud and Lindquist reported that from the third grade through the eighth girls maintained a consistent and on the whole significant superiority over boys in reading comprehension, vocabulary, work-study skills, and basic language skills. In arithmetic skills small but insignificant differences favored the boys. In high school scores all differences in their sample were in favor of the boys except in reading comprehension, language usage, and algebra, where the differences which favored the girls were not significant. The authors suggest that to some extent the change in curriculum may account for reversal of the sex difference, that the subjects added at the high school level tend to favor the interests and aptitudes of the boys. Other possible hypotheses are that the advantages gained through maturity on the part of the girls tend to be lost, and that more boys than girls have dropped out of school at the high school level.

Hanske (**39**) compared 125 boys with 105 girls in the first and second semesters of high school chemistry in a city high school. Median I.Q.'s derived from the Terman Group Test of Mental Ability were identical for the boys and the girls; the average age of the boys exceeded the average age of the girls by five months. Two-thirds of the boys and one-third of the girls had been enrolled in other science courses. Eighty-six boys and 18 girls had had three sciences other than chemistry; 27 boys and 5 girls had had two other sciences. The author attributed the superiority of the boys in chemistry to more general as well as more extensive training in science on the part of the boys.

Hurd (**44**), testing 134 boys and 134 girls matched with respect to age, grade, and instructor, for achievement in physical science, at the beginning and at the end of the semester, found boys to be superior in achievement, but that the girls made a larger mean gain than the boys. He concluded that earlier training had been deficient for the girls but that they were able to make up a part of the deficiency.

Bennet and Cruikshank (**12**) found boys to be superior to girls in the understanding of mechanical problems.

Pyle (**73**), adminstering four specially constructed tests to 484 high school pupils, found a relation between sex differences in test results and type of material used. Boys excelled on tests which dealt with scientific material, and girls excelled on tests which dealt with feminine interests.

Garrett (**34**), using a symbol digit test, a code learning test, and an artificial language test, administered to college students, found women superior to men in tests requiring language association, and men superior to women in tests requiring spatial and numerical associations. He concluded that the type of material was more important than level of difficulty or practice conditions in determining sex differences.

Sex differences in variability.

Of interest in relation to sex differences in variability is the incidence of feeble-mindedness. Schmitt (**83**) summarizes the results of extensive surveys. A survey made by the English Royal Commission reported a ratio of six males to five females among the feeble-minded. The Bureau of Child Study of the Board of Education of Chicago examined 5,286 children referred by schools as retarded or problem children during 1923-24. The referred group consisted of 3,287 boys and 1,539 girls. Of these, 1,343 boys and 680 girls were found to have intelligence quotients below 75, a sex ratio of 1.95 to 1. Ratios reported in other American populations range from 1.5 to 1, to 2 to 1, but the larger percentage of mentally defective children in the populations reported was always found among the boys.

Lewis (**53**) reported data obtained from a survey of 45,000 elementary school children in 455 schools in 310 communities in 36 states, by Coordinated Studies in Education, Incorporated. The Kuhlman-Anderson Intelligence Test was administered in grades four through eight, and a detailed study of the upper ten per cent was made by the author. Among the upper two per cent of the distribution 146.3 girls were found to 100 boys; 61.2 per cent of the group with I.Q.'s of 120 or above were girls.

Rigg (**76**) computed the relative variability of intelligence of 5,196 boys and 5,010 girls in grades three to eight, in 22 city schools, based on I.Q.'s made on the National Intelligence Test. He comments that the view that males are more variable than females is usually drawn from such observations as that there are more famous men than women, and more males than females in homes for the feeble-minded. He contends that both views are unscientific, since they do not take into consideration such factors as that men have been compelled to make careers for themselves longer than women, and so

have had greater motivation and greater opportunity for achievement, and that on the other hand, it is probable that more feeble-minded girls than boys are cared for at home, and not institutionalized. In the present study a mean I.Q. of 103.56 was obtained for the boys, and of 106.94 for the girls. The difference was statistically significant. Variability was computed in five ways, by means of the Q, the MD, the V and the sigma of the distribution, as well as by means of the proportions of boys and girls in the upper and lower seven per cents of the distribution. None of the differences were reliable, although the difference in the coefficients of variability approached reliability. The author contended that not only the direction but the reliability of the difference must be considered, and believed the data to support the view that there is no appreciable sex difference in variability with respect to intelligence.

Commins (**21**) found that boys showed greater variability than girls in school achievement as measured by the National Intelligence Test and the Stanford Achievement Test, administered to a fifth grade population, and the McCall Multi-Mental Scale administered to 190 pupils from the third grade through high school. He does not report the reliability of the difference found in variability. He concluded, however, that when physiological development is considered, there does not seem to be any greater variability in the male than in the female, and that in those traits where the male shows greater variability, it may be acquired, due to differences in traditional upbringing and education, rather than innate.

Hemnon and Livingston (**42**) report further that variability in both mental and physical traits varies from one age level to another for both sexes.

VII. Sex Differences in Behavior Problems and Maladjustments

Sex differences in the behavior of preschool children.

Hattwick (**41**) presents an analysis of the behavior of 283 boys and 286 girls in Chicago nursery schools, as observed and reported by teachers. Items reported more frequently for boys than for girls were: grabs toys; attacks others; laughs, squeals, and jumps excessively; rushes into danger; poor work habits, such as asks unnecessary help and wastes time; speech difficulty; tendency toward masturbation. Items reported more frequently for girls than for boys were: avoids play; stays near adult; and sucks thumb. Most of the behavior listed revealed sex differences as obviously at 2 or 2.5 years as at 3.5 or 4 years.

Two studies by Green (**37, 38**) based on observations made on 40 nursery school children between the ages of two years and one month and five years, during free play periods, showed that boys quarreled more than girls, and that girls at every age were more socialized than boys, as indicated by their participation in group play. Boys used force more than girls in settling their differences, while girls used verbal argument to a greater degree.

Jersild and Markey (**46**) also studied conflicts occurring among 54 children between the ages of two and four. A conflict situation was defined as any instance in which a child attacked another's person, interferred with his activities or possessions, threatened him, or made a demand verbally or by force against the desires of the other child. Boys showed a higher incidence of conflicts in all groups where sexes were compared without regard to age. In the two, three, and four year old age groups they showed a higher average number of aggressions. In the two year old group boys and girls were about equal

in the amount of hitting, screaming, and crying recorded, but in the older groups boys showed a substantially higher incidence of hitting, and in the number of overt attacks made on other children. Girls made more use of language and boys of force.

Caille (**18**), studying the resistant, acquiescent, and aggressive responses of 36 nursery school children between the ages of 19 and 49 months, found that boys made more of all three types of responses than girls, but the chances were 99 in 100 that they showed more aggressive responses than girls.

Levy and Tulchin (**52**) reported the resistant behavior of 110 infants and children between the ages of 6 and 64 months, during mental tests. Simple crying, but not struggling or clinging to mother, was more frequent in girls than in boys after the twenty-fourth month. It is significant that this behavior did not once appear in the behavior of males after the third year. Clinging to the mother was more frequent in girls than in boys to a statistically significant degree. Withdrawing reactions, such as hand withdrawal movements, returning to mother after partially completing a test, turning head away to mother, turning head downward, covering face with hands, and looking away from object were noted in girls more frequently than in boys at every age period. The differences were statistically significant. Screaming, or struggling, or both, occurred typically for 17 and 18 months old girls and boys between 30 and 32 months.

Blatz and Ringland (**13**) studied tics in preschool and first grade children, defining tics as 'any circumscribed muscular activity exclusive of gross random movement that is not necessary or relevant for the immediate adjustment to the apparent motivating situation.' They found no sex differences except in first grade children, where boys tended to exceed girls in the number of such movements, implying probably a greater difficulty on the part of the boys in adjusting to the restraints of the schoolroom.

Michaels and Goodman (**64**), studying enuresis and related traits in a population of 220 girls and 255 boys in attendance at Detroit recreation camps, found a slightly higher incidence of enuresis among the boys than among the girls. Girls tended to show more thumb-sucking, nail-biting, tantrums, sleep disturbances, dreaming and fears, while boys showed more enuresis, speech impediments, and school failures.

Sex differences in school adjustments.

Remer (**75**) studied traits reported as handicapping children entering kindergarten and first grade. The group of children selected by 19 teachers as handicapped to some degree included 378 boys and 356 girls. It is significant that the sex difference here is smaller than that found among groups of older children. Of the five year old children, 18 per cent of the boys and 15 per cent of the girls were considered handicapped, and of the six year olds, 30 per cent of the boys and 24 per cent of the girls. It is of further significance that not only the percentage of all children judged to be handicapped increased markedly between kindergarten and the first grade, but that the magnitude of the sex difference was doubled. Large differences pointing to greater incidence among boys than among girls were reported for the following handicaps: inability to adjust readily to new situations, lack of initiative, lack of self confidence, dependency upon adults, tendency to be shy and sensitive, tendency to be lazy, tendency to be disobedient, tendency to disregard property rights, over-aggressive behavior, fighting, lack of effort, inhibited speech, meager speaking vocabulary, not speaking clearly, and stuttering.

Wickman's (**98**) extensive study of children's behavior and teachers' attitudes was designed to determine the

requirements for behavior which are imposed upon children by teachers, and the adequacy with which the child responds to these requirements. Each of the following problems was reported by teachers as occurring twice as often among boys as among girls: tardiness, truancy, destruction of property, stealing, profanity, smoking, masturbation, interrupting, over-activity, laziness, disobedience, cruelty, bullying, rudeness, meddlesomeness, acting s m a r t, nervousness, enuresis, slovenliness, suspiciousness, and suggestibility. Only one item, shyness, was reported as occurring as often among girls as among boys, and only two, sensitiveness and writing obscene notes, were reported more frequently for girls than for boys; the incidence of the latter, however, was so small as to be inconclusive. Wickman concluded that attacking behavior was considered more serious than withdrawing behavior by teachers, and that they favored submissive traits more characteristic of girl than of boy behavior. Teachers' attitudes as revealed by this study were at variance with those of mental hygienists, but according to the author, were quite possibly those that prevail in society.

McClure (**57**), in a similar study, found five boys to one girl reported by teachers as behavior problems (447 boys, 86 girls). Boys were most frequently reported for annoying other children, for whispering, carelessness in written work, general disobedience, disrespect towards teacher, disorder during intermission, and unreliability. Twice as many boys as girls were reported as lacking parental encouragement, and three and a half times as many boys as girls were reported as being sensitive about speech or some other defect. Like Wickman, McClure concluded that teachers were more concerned about problems relating to classroom procedures than they were about less overt forms of maladjustments.

Boynton (**15**) asked each of 66 fifth and sixth grade teachers to select the five children from their classrooms whom they considered the 'worst problems.' Of the children selected, 74.5 per cent (246 out of 330) were boys. The most frequently listed complaints were inattention, carelessness, lack of interest in work, refusal to study, disturbing classroom routine, whispering, and general disorderliness in class. The author concluded that boys fit the school groove less easily than girls, or react more overtly to conflict situations.

Teachers in a large junior high school were asked by Houtchens (**43**) to submit names of two or three boys whom they considered the most and the least well-adjusted of their pupils. The association-motor technique for measuring adjustment and maladjustment, consisting of the Kent-Rosanoff association test words as stimuli, with reaction times, verbal responses, voluntary motor responses, and involuntary motor responses recorded simultaneously on a polygraph setup, was used. The ability of this technique to differentiate adjusted and maladjusted groups had been previously demonstrated by Luria (**55**) and others. The group selected as a problem group by teachers approximated the distribution of juvenile delinquency groups characterized by overt conduct disorders. It was found, however, that not only had the teachers failed to recognize the seriousness of withdrawing evasive patterns, but they had actually selected children most extremely maladjusted in these respects as their 'best-adjusted' pupils.

The discrepancy between the ratings of girls and boys by teachers has sometimes been attributed to the sex of the teacher. Two studies, one by Langlie (**51**) and one by Hart and Olander (**40**), not only fail to support this hypothesis, by finding that there are few statistically significant differences between the ratings of men and women teachers, but found also that in some instances, at least, men

teachers rated girls relatively higher than women teachers did in intelligence, learning ability, industry, and personal qualities such as sincerity, honesty, kindness, and energy.

Attitudes of parents, teachers, and mental hygienists towards children's behavior.

Bott (**14**) compared the attitudes of 200 parents, 150 public school teachers, 100 public health and visiting nurses, 50 social workers, and 50 mental hygienists towards 21 misdemeanors reported by teachers in a public school in Toronto. Teachers listed destructiveness, disobedience, uncleanliness, profanity, and impertinence as the most serious problems, while mental hygienists listed avoidance of the group, day-dreaming, shyness, lack of application, enuresis, and mannerisms as most serious—all of which teachers regarded as relatively unimportant. The attitudes of teachers and mental hygienists differed more widely than those of any other two groups. The attitudes of parents, nurses, and social workers differed from those of mental hygienists also, but to a less marked degree. Parents included in the study were enrolled in parent education classes at St. George's School for Child Study, and although they were described as new to child study, their presence in such a class would seem to indicate a greater awareness of children's needs and difficulties than is possessed by the average parent.

Similar results are reported by Stodgill (**88, 89**). He found that parents and teachers tended to approve of child behavior which made for smooth running of household and classroom, and to show little regard for withdrawing self-centered reactions. Clinial psychologists, on the other hand, approved of active, extroverted social adjustment in children, regardless of the convenience of parents and teachers. Parents endorsed strict control, while psychologists stressed freedom from compulsion. Parents were found to be inconsistent in certain of their attitudes, and women were found to be slightly more liberal than men.

Sex differences among delinquent and predelinquent children.

A survey made by Williams (**99**) discovered 1,343 children in ten midwestern cities, who were judged by their teachers to have to a sufficiently serious degree traits which might cause them to be delinquent. Four times as many boys as girls were classified as predelinquent. The boys were characterized by teachers as being more resistant to authority, engaging in more misconduct in school, and annoying other children more than predelinquent girls. The girls were characterized as being more subject to inferiority feelings, more interested in sex, and more over-developed physically for their age than the boys.

Fenton and Wallace (**32**), in a statistical study of 1660 cases referred for clinical help to the California Bureau of Juvenile Research, found three times as many boys as girls in this population. The ratio of boys to girls referred for delinquency was 4.5 to 1; for predelinquency, 3.4 to 1; for behavior problems, 4.4 to 1; for personality problems, 2.6 to 1; for difficulty with school subjects, 2.6 to 1; and for mental diseases, 2.3 to 1. Occurring more often among boys than among girls were problems of aggressiveness, discipline, emotional maladjustment, anti-social behavior, and social maladjustment. Problems occurring more often for girls than for boys were inadequate family relationships, immaturity, emotional disturbances, faulty parental affections, sleeping disorders, physical defects, and problems relating to sex.

Caldwell (**19**), in a statistical study of commitments to two schools for delinquent boys and girls in Wisconsin during a selected period, found that the largest percentage of boys were

committed for stealing, while the largest percentage of girls were committed for sex offenses. Girls were on the average two years older than boys on commitment and more girls than boys were committed on a first offense. More girls than boys had I.Q.'s below 80. More girls than boys were from broken homes, and from homes judged to be minimum or below. Fewer girls than boys were living with a parent at the time of commitment. The author concluded that girls were more susceptible to the influence of the home, or perhaps more sheltered in the average home than boys.

Snyder (87) administered the Stanford Revision of the Binet-Simon Scale, the Stanford Achievement Test, and the Woodward Mathews Personal Data sheet to a population of 100 girls and 100 boys committed to a Pennsylvania Training School during specified periods. A hundred consecutive tests were used for each sex. The average I.Q. for the boys was 71.25, while that for the girls was 71.46, but the boys showed a greater deviation from the average than the girls. Seventy boys and four girls were committed for offenses against property; 78 girls and one boy were committed for sexual offenses. More boys than girls gave being influenced by others as the reason for their delinquency; more girls than boys blamed unpleasant conditions at home. Girls showed a greater tendency toward dream life than boys, and tended to feel more strongly that they were misunderstood, not loved, and not treated well. Boys complained more than girls of their physical ailments, and more boys than girls felt that they had been wicked.

Alper (3) found that of 3,281 children who passed through the courts of 60 Pennsylvania counties in 1932 on charges of delinquency and incorrigibility, 77.2 per cent were boys and 22.8 per cent were girls, a ratio of more than three to one. As in other studies reported, boys were committed chiefly for property and girls for sex offenses. Probation rather than commitment was used for 39.3 per cent of the boys and 24.9 per cent of the girls. This might indicate greater leniency toward the boys, or on the other hand it might also indicate the attitude that girls from homes which had failed to protect them needed to a greater extent the protection afforded by an institution.

VII. Summary of Sex Differences In Stuttering and Related Areas as Reported in Relevant Literature

A SEX DIFFERENCE of from two to ten males to one female is found among stutterers, the magnitude of the ratio varying according to the age and educational status of the population studied, and according to methods used in obtaining samples and making surveys. Males tend to experience a more severe form of stuttering than females, and more males than females are found who 'outgrow' stuttering.

Male infants have more difficult births than female infants, and incur more birth injuries. More fetal and neo-natal deaths and more deaths during the first year of life occur among males than among females. Males present throughout life a greater susceptibility to disease than females, and have besides a greater statistical probability of meeting sudden and violent death. During infancy and childhood growth proceeds at a relatively more accelerated rate for females than for males, in most respects; pubescent acceleration appears earlier for girls than for boys. During the preschool period girls are ahead of boys in language development as revealed by all measures which show developmental trends. Boys show more speech repetitions than girls. More boys than girls are referred to clinics for speech retardation, special language disabilities, and articulatory speech defects. Approximately three times as many boys

as girls are referred to clinics for reading disabilities. Boys make more errors than girls in writing and spelling, and their school achievement correlates less well with their intelligence. At the preschool and the elementary school level sex differences in intelligence and school achievement, as determined by standard tests, by grade status, and teachers' ratings consistently favor girls rather than boys. The difference in achievement is reversed at the high school level by the addition of courses in science, mathematics, and social studies, in which boys tend to excel, but girls tend to maintain their superiority in language, and more boys than girls have dropped out of school sometime between reaching the age limit of compulsory school attendance and high school graduation. A sex ratio comparable to that found among stutterers is found among behavior problems reported by teachers, and among children referred to child welfare clinics and institutes for juvenile research for various maladjustments. It obtains also in studies of delinquent and predelinquent children.

It is found that teachers, parents, and society generally tend to reward children for submissive and withdrawing behavior (which psychologists and mental hygienists consider indicative of serious maladjustment) and to penalize them for traits of aggressiveness, independence, and assertiveness, which males in our culture are nevertheless expected to develop (**92**).

A tenable hypothesis would seem to be that the male child, whose physical, social, and language development proceeds at a slower rate than that of the female, encounters more unequal competition, and consequently more frustrations, particularly in relation to language situations, than the female child, and that as a result he exhibits more insecurity, more hesitancy, and more inhibitions in speech. If the frustrating situations are too many, if his speech behavior is compared unfavorably with that of other children, or if he becomes aware of unfavorable reactions toward it on the part of other people, it is conceivable that anxieties and tensions and the overt behavior regarded as stuttering might develop. To test this hypothesis more comprehensive studies than any so far made of stuttering at its onset are necessary. These studies should involve an evaluation of parental attitudes, family attitudes, attitudes of relatives and playmates, and the role of the child in all the relevant situations which are a part of his life.

It seems clear that insecurities, anxieties and tensions would tend to be increased by the contradictory attitudes prevalent in our culture: first, the demand that the male child exhibit independence, fearlessness, self-control, and a certain amount of aggressiveness (**92**); and second, that he must at the same time be submissive, orderly, and obedient; that his behavior must not disturb the order and routine of home or classroom; that it must conform to standards of parents and teachers derived from attitudes diametrically opposed to those which clinical psychologists consider conducive to healthful modes of behavior. This area will be explored further in the second part of this study, and further implications of these data will be considered.

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A Cooperative Special Training Institute

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THE PURPOSE of this article is to describe the development of a special training institute set up cooperatively by several agencies in Illinois.

During the early period of developing the speech and hearing program, it became increasingly apparent that one group of individuals was not receiving adequate help. This group, the mothers of preschool deaf and hard of hearing children, had almost no resources for medical, educational, and psychological counseling. Out of this need grew an institute for the mothers of these children which was held for two weeks in June of 1945 and again for ten days in June of 1946.

In selecting the group, only children between the ages of 2.5 and 5 years of age who had not previously been in school and were residents of Illinois were considered. The cost of the project was borne by the cooperating agencies. In 1945, twenty-one mothers and their children attended and in 1946 twenty-two attended.

In formulating the plans for the institute several agencies having an interest in the problem cooperated to make it possible. The Illinois Commission for Handicapped Children served in an advisory capacity since one of its major functions is to stimulate the development of new resources to meet the needs of the handicapped child. The Division of Services for Crippled Children of the University of Illinois in its clinics throughout the state was reaching many of these mothers and thus became the logical case-finding agency. In addition to cases contacted through clinics, other mothers were reached through letters to pediatricians and otologists, university and college speech clinics, speech and hearing therapists, and through newspaper articles.

In order to enable children to benefit from help before entering school, the Illinois School for the Deaf of the State Department of Public Welfare offered its facilities for the actual locale of the center. This included board and lodging for the children and the mothers, use of its special equipment and classrooms, and the services of its teaching and administrative staff.

The Division of Special Education in the Office of the State Superintendent of Public Instruction also had a real interest in the project since it has the responsibility of supervision of the special oral deaf rooms in local school districts throughout the state. Their cooperation aided materially in planning the program and they were able to provide funds for supplementary teachers.

Staff members from all four of these agencies served as the planning committee which formulated the overall philosophy and worked out the schedule and program of the institute. The interest and cooperation of the entire group was probably the

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greatest single factor in making the institute possible.

THE DAILY program which was worked out began with a morning instruction period for the mothers. This was devoted to teaching and demonstration of the various phases of special education given deaf children, including sense training, speech development, lip reading, and acoustic training. Some of the children attending the institute were used in these demonstrations. During the last few days of the institute the mothers were given practice in working with their own children.

The emphasis of this part of the instruction was not placed on giving training to the children nor on teaching the mothers the specific techniques used in teaching deaf children. Rather the teachers attempted to give the mothers insight into and understanding of the special learning problems of the deaf child, and the rationale behind the teaching techniques used. Suggestions were made of ways in which the mothers could enrich the child's experience background and stimulate speech development.

After lunch while the children had their afternoon naps the mothers attended a lecture given each day by a visiting specialist who discussed the problems of the deaf child as they related to his particular field of interest. The scope of this part of the program can best be shown by the following list of speakers and their topics:

What Mothers can do for the Deaf Child—Mrs. Spencer Tracy, Director, John Tracy Clinic, Los Angeles, California.

Physical Needs of Young Children—Gerald M. Cline, M.D., Pediatrician, Bloomington, Illinois.

Psychology of Young Deaf Children—Helen Schick Lane, Ph.D., Principal, Central Institute for the Deaf, St. Louis, Missouri.

The Ear Mechanism and How it Functions—George E. Shambaugh, M.D., Otologist, Chicago, Illinois.

Social Development of the Deaf Child—Helmer R. Myklebust, Ed.D., Psychologist, Director of Department of Research, New Jersey School for the Deaf, West Trenton, N. J.

Child Development—Mrs. James L. Cassidy, Assistant Director, The Michael Reese Hospital Nursery School, Chicago, Illinois.

How Hearing Can be Used in a Hearing Program in School—S. Richard Silverman, Registrar, Teachers College, Central Institue for the Deaf, St. Louis, Missouri.

The Education of the Deaf Child—Maurice V. Moriarty, M.A., Supervising Teacher, Illinois School for the Deaf, Jacksonville, Illinois.

The History of the Development of the Education for the Deaf—Daniel T. Cloud, Superintendent of the Illinois School for the Deaf, Jacksonville, Illinois.

Panel Discussion and Summation by Institute Teaching Staff—Chairman R. Moore Stelle, M.A., Assistant Superintendent, Illinois School for the Deaf, Jacksonville, Illinois.

At the conclusion of each lecture the mothers took part in a question and answer period with the speaker, and some group and individual conferences were arranged.

In the evenings, a variety of activities developed. Some of the mothers used this time to become better acquainted with special teaching and motivational devices—even copying many of the materials for later use in their own homes. Others took part in informal group recreation which grew out of their richly varied backgrounds. All of the group found this time useful for discussing their problems with each other and for further clarification of the information they were receiving. It will doubtless interest the reader to note here that the group of mothers who attended the institute held last year are continuing this interchange of ideas through a 'round-robin' letter which includes both the mothers and the teaching staff of the training program.

In a questionaire following the 1945 institute the attending mothers indicated a desire for more help in understanding the psychological and social problems of their children. Therefore a medical social worker from

the Division of Services for Crippled Children was added to the institute staff. Each mother had one scheduled interview with this consultant and additional time was arranged if the mother requested it. During this interview a detailed medical and social history was taken for later use in following the cases and for possible research. At this time the mother had an opportunity to discuss any problems involved in the care and training of her child.

Of paramount importance in this interview was the formulating of a possible plan of action for the mother in meeting her child's particular medical and educational needs. An attempt was made to acquaint her with all possible resources and to formulate with her a concrete plan of action. In each instance the possibilities were evaluated in terms of the home situation, financial considerations, transportation problems and the total evaluation of the child's medical, social, psychological, and educational needs.

One additional change was made in the over-all planning for the institute following the first year's experience. It was felt that the mothers should be given more help in caring for the children so that more of their time and attention could be devoted to the instruction. Therefore cottage parents were selected with care and they assumed major responsibility for the children except for meals, nap-time, getting up and going to bed, and the time actually spent in classrooms.

Plans for the complete follow-up of the children attending the institute are still being formulated. Some can be seen periodically in the clinics of the Division of Services for Crippled Children. Others (mainly in the Chicago area) will be referred back to the social and medical agencies who originally directed them to the center. Some are old enough to be enrolled in the nursery of the Illinois School for the Deaf, and a few will be able to attend day schools near their homes. Several mothers are already enrolled in the John Tracy Clinic Correspondence course and others plan to enroll soon. All of the cooperating agencies hope that this group of children can form a nucleus for a long term educational follow-up research project.

IN CONCLUSION it might be interesting to note some observations made by the staff of the institute regarding the mothers and how they benefited from the program. The most obvious results appeared to be centered around the gradual changes in the mothers' attitudes toward their children and the special problems resulting from their deafness. The experience of becoming acquainted with other mothers having similar problems appeared to give them considerable emotional support. The opportunity of being removed from major household responsibilities for a short period of time gave the mothers a chance to view more objectively their children and their own adjustment to the special problems involved. For example, it was felt that two of the mothers who attended gained greater acceptance of their children's apparent mental retardation through the comparison of their level of achievement with other deaf children of the same age group. The mothers who attended obviously felt the institute to be worthwhile. They expressed without exception their gratitude for being given the opportunity to take part in the training session.

It is hoped that the experience of the agencies who cooperated in setting up this institute in Illinois can be of help to similar agencies in other states and that it might stimulate further interest in projects of this type.

News and Announcements

(Continued from Page 276)

The speech staff consisted of Mrs. Cardozo and Dr. Lou Kennedy. The students, 4 girls and 8 boys, consisted of 7 cases of post-operative cleft palate speech disorder and 5 other cases of severe speech disorder.

Each child received three daily lessons averaging 30 minutes in duration, supplemented by generous informal speech activities. Good results followed this intensive, individual method of training. Two girls and two boys were able, by the close of the session, to speak as well as an average child; the other children showed marked improvement. The therapists attributed the unexpectedly noticeable progress to the concentrated speech program.

Marion R. Mobley, M.D., has been appointed Section Chief of Branch 5 of the Veterans Administration. In this capacity he will be responsible for the hearing rehabilitation program in Tennessee, South Carolina, Georgia, Florida and Alabama. Plans are being made to utilize existing facilities as well as setting up new installations. Dr. Mobley received a citation for exceptionally meritorious service in initiating the Army hearing rehabilitation program at Walter Reed in 1943. He served as Chief of Service both at Walter Reed and Deshon General Hospitals.

A meeting of the Consultants on Audiometers and Hearing Aids of the Council on Physical Medicine of the American Medical Association was held at the Palmer House on October 19th and 20th. This committee has set up minimum requirements for acceptable audiometers and hearing aids. All instruments carrying the approval of the American Medical Association have met these requirements. The detailed report of each instrument as it is accepted is published in the *Journal of the American Medical Association.*

At their annual meeting last spring, the Indiana Speech Correction and Hearing Therapy Association elected officers for the years 1946 and 1947. The new president of the association is Margaret Rowe, Director of Speech Correction in the Evansville Public Schools. The new vice-president is Thelma Knudson, Director of Speech Correction in South Bend, and Marguerite Berning, Teacher of Speech and Hearing Therapy in Fort Wayne, is the secretary-treasurer.

Through a cooperative arrangement between the State University of Iowa and the Iowa State School for the Deaf, two internships have been established in the State School for the Deaf. Students holding these internships spend one semester in the School for the Deaf and the other semester of the school year on the University campus where they serve as Research Assistants. During their internships, the students work intensively in the teaching of speech to the deaf, lip reading, audiometry, personality adjustment procedures, and they also spend a large share of their time observing the regular classroom teaching in the school besides devoting a part of their time to research. During the semester which they spend on the University campus their research assistantships are served in the Department of Otolaryngology where they assist with speech testing, audiometry, hearing aid fitting and research. The program involves four appointments each school year. Further information may be obtained from Dr. Wendell Johnson, Director of the Speech Clinic at the State University of Iowa.

JOURNAL OF SPEECH DISORDERS, 1946, **11**, 303-308

Speech Disorders In World War II: VIII. Stuttering

William G. Peacher*
William E. Harris

NOW THAT World War II has ended and the armed forces of this nation are in a process of rapid demobilization, it seems appropriate at this time to attempt to review in some measure the extent of the contribution made by stutterers. It may be stated with considerable certainty that there was a rather large number of these men in the Army, but only a very few in the Navy and Marine Corps. The writers know of several stutterers who served in the Army Air Force, but none who achieved the rating of pilot, bombardier, or navigator.* This is understandable when it is considered that interphone communication is vital in a plane, and that any interruption in speech, particularly in the combat situation, might easily endanger the lives of the entire crew.

Early in the war (March 15, 1942), War Department regulations were revised so that stutterers were inducted into the Army. Acceptable for general service were 'men whose speech can readily be understood, even though there is a moderate degree of stuttering or stammering if otherwise physically, intellectually and emotionally fit.' Available for limited duty were those showing 'stuttering and stammering of a degree disqualifying for general military service, but which has not prevented the men from successfully following a useful vocation in civil life.' Those deemed unacceptable by the Army were those who exhibited 'stammering to such a degree that the registrant is unable to express himself clearly or to repeat commands.' The Navy, however, designated stuttering as 'a cause for rejection for appointment in the Naval Service' (**3**).

The interpretation of the regulation applying to the induction of stutterers has varied widely and it is evident that a given individual could be accepted or rejected by different stations. Figures are not available indicating how many of these men failed to meet entrance requirements for conditions other than speech. Further, even when stutterers were rejected for this symptom alone, the exact number is unknown due to the non-specific designation of all language disorders as 'rejected for speech defect.' Induction examinations have varied with the daily case load. In some cases an interview with a psychiatrist was possible and under these circumstances a minor speech defect could often be diagnosed. On the other hand, such

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*At least two stutterers known to the Editor achieved the rating of pilot. (W. J.)

responsibility was not uncommonly delegated to enlisted personnel, many not qualified to conduct adequate observations, either from lack of knowledge, instruction or interest in this type of case. Instances have also been known where examinations were omitted unless the psychiatrist noticed a man who impressed him as being psychologically unstable while passing in review. A standard form including the reading of a short phonetically edited passage published by the War Department and made available to every induction station would do much to obviate such pre- and possibly post-induction difficulties. Certainly such a procedure would further have detected the majority of such cases if conducted in intelligent hands. No criticism of past management is implied in the above statements, as the enormous task of completely examining thousands of men every day during a national emergency can be appreciated only by those who were confronted with this problem. We have attempted merely to present existing facts and suggestions as to a solution of a similar situation, should a future emergency arise.

Taking all available statistics into consideration, Johnson (3) estimated that from five to eight stutterers per thousand were seen at induction stations, but more than one-half of the cases examined were rejected for reasons other than the condition of their speech. If we assume then that of the five to eight men initially observed with this symptom, only two per thousand were finally accepted for service, a total of 24,000 stutterers have served during World War II. This figure is derived on the basis of a 12,000,000-man Army during the war years.

Of particular interest to the speech pathologist and psychologist is the question of how well the large number of stutterers who were in the Army adjusted to the rigors and frustrations of military life. It is our opinion that these men, generally speaking, were good soldiers and that they performed their duties as faithfully and competently as might any other randomly selected group of individuals not so diagnosed. The reasons for this statement will be developed in succeeding paragraphs in connection with our work with stutterers at two Army General Hospitals.

DURING THE PERIOD between May 1943 and April 1946, the writers saw 114 stutterers while on duty at Brooke General Hospital, San Antonio, Texas, and McGuire General Hospital, Richmond, Virginia. These men were mainly from Infantry divisions, although most of the other branches of the Army were represented, such as the Signal Corps, Chemical Warfare, Air Force, etc. They ranged in age from 18 to 50 years. Eight of the stutterers were colored. Sixteen gave a family history of this symptom, usually in the father. Twelve men had received some form of treatment for stuttering prior to their entry into the Army, and expressed the feeling that some benefit had resulted.

To facilitate presentation our cases have been divided into two large groups: (1) pre-induction and (2) post-induction. The first includes those who showed this symptom prior to entry into the Service, while the second comprises those who developed stuttering following exposure to combat conditions over an extended period of time.

Post-induction stutterers showing mild anxiety symptoms that cleared up under psychiatric measures in a few days to several weeks were classified as combat fatigue, while those with more permanent, recurrent and disabling symptoms were classified as psychoneurotics.

As will be seen in Table 1, 40 of the pre-induction stutterers observed at

TABLE 1. Pre-induction and post-induction stutterers seen at Brooke and McGuire General Hospitals.

A. *Pre-induction stutterers*	
Wounded in action	27
Saw action but not wounded	13
Not in action	37
Total	77
B. *Post-induction stutterers*	
Combat fatigue	30
Combat fatigue accompanying psychoneurosis	7
Total	37
Total Groups A and B	114

our clinic saw actual combat duty, 27 of this number having been wounded. Only three of the pre-induction cases who engaged enemy forces were later diagnosed as psychoneurotics as against 11 of those who were not so joined. In this group, only one was sent to a hospital for combat fatigue alone. Twenty-four stated there was no change in their stuttering, whereas nine mentioned slight temporary exaggeration of this symptom. The majority of stutterers seen at both hospitals were observed only during treatment for some intercurrent medical or surgical condition, although 15 presented themselves at the speech clinic and requested treatment for their language defect alone. In such instances therapy was given while the soldier carried a full schedule of military duty. It has thus been demonstrated that 40, or 52 per cent, of the pre-induction stutterers seen by us served under actual combat conditions, and it is our feeling, although no comparative figures can be given here, that these men stood up as well under the duress of war as did non-stutterers. This is evidenced by the small number of these men who experienced combat fatigue. It may be of interest to point out here that two of the combat stutterers interviewed said that their speech improved under the stress of battle. 'Things were happening so fast that I didn't have time to worry about my speech.' It is also our impression that stutterers adjusted well in the Service in every instance where they did not react emotionally to the blocking in their speech. The Army was such a large organization that an assignment was usually available for every man to perform duty adequately.

Of equal significance to the speech pathologist is the ability of stutterers to advance in grade while in military service. In spite of many isolated instances to the contrary, promotion from a lower to a higher rank indicates unusual ability and diligence, and is further rather conclusive evidence that the soldier has won the confidence of both his Commanding Officer and fellow soldiers. As will be seen in Table 2, the stutterers seen by us ranged in grade from Private to Lieutenant-Colonel, although it should be stated here that the latter officer exhibited perhaps the mildest blocking in speech of any of the cases referred to our clinic. The fact, however, that a large number of stutterers were able to advance beyond the grade of Private and even to become commissioned officers demonstrates in

TABLE 2. Range in military status of stutterers seen at Brooke and McGuire General Hospital.

	Pre-induction	*Post-induction*	
Pvt	32	10	
Pfc	17	13	
Tec 5	2	2	
Cpl	4	1	
Tec 4	1	1	
Sgt	4	3	
S Sgt	5	5	
T Sgt	0	1	
M Sgt	1	0	
Aviation Cadet	3	0	
2nd Lt	4	1	
1st Lt	1	0	
Capt	1	0	
Major	1	0	
Lt Col	1	0	
	77	37	
Total			114

a rather striking manner that this condition as such cannot be considered a serious handicap to military service. Johnson (3) in an earlier paper likewise cited a number of isolated instances where stutterers had been promoted.

It can be stated unequivocally that the Army has at no time recognized a need for treatment of stutterers, and that where such therapy has been given it may be attributed solely to the interest of a physician or speech pathologist who was able to work with a few cases 'on the side,' or else treatment was given in speech clinics formally set up by the Surgeon General in April 1945 for the express purpose of giving therapy to dysphasias usually resulting from head injuries. Even under the latter circumstances, it was not always possible to give adequate attention to stutterers, since many clinics did not have sufficiently trained personnel to handle all cases referred; consequently cases of dysphasia were given priority on treatment in every instance. Again, no condemnation of War Department policy is to be implied here, since it is in fundamental agreement with the induction policy whereby stutterers otherwise physically, intellectually and emotionally fit were accepted for full duty. It is only fair to point out that members of the speech profession were aware of these problems at the beginning of the war and offered their services to aid in solving them, but, unfortunately, little was done other than the eventual recognition of the speech training needs of the dysphasics.

Darley and Spriesterbach (2) observed 22 cases of speech disorders early in 1942, 11 of whom were stutterers. Although no details were given, individual and group therapy was said to have resulted in improvement over a three-week period. In a report on speech correction at a hard of hearing center (Deshon General Hospital), Allshouse (1) observed only a few cases of stuttering. Of these, two were war casualties with associated impairment of hearing. Treatment of the stutterers apparently followed a psychological approach with some emphasis on changing the speech pattern. Stevenson and Mikalson (8) recently reported that a speech therapy program had been organized in the Naval hospitals designated as centers for plastic and neurosurgery. Training was correlated with a general plan of rehabilitation and included both individual and group therapy. One series of cases treated, pertinent to the present study, included psychogenic disorders resulting from conditions incurred in Service. An average of three patients of this type was found in the average hospital census. One childhood case of stuttering was cited that was accentuated on exposure to combat. Following negative practice, he improved sufficiently to return to duty.

SOME MATERIAL on stuttering has already appeared from this hospital (4, 5, 6). The present paper further amplifies this subject and includes continued observations, additional cases studied, and methods of treatment. One of the writers (WGP) has recently made a survey of the various speech disorders in the United States and British Armies (7). This showed conclusively that from the standpoint of frequency the emphasis was on the organic defects, chiefly dysphasia, with a few cases of dysarthria and dysphonia. Without exception, every communication received both from here and abroad either omitted mentioning the condition entirely, or else stated that a few cases of stuttering had been seen, or an occasional psychogenic disorder observed, and concluded with the statement that the majority of cases were dysphasics.

At Brooke General Hospital, therapy for stutterers was under the direction of the psychiatric staff. These cases were observed at least once a week by the neurosurgeon (WGP)

in charge of the speech clinic at this station. Stuttering was treated chiefly as a psychoneurotic manifestation, as is frequently the case where the psychiatrist is disposed by training or theoretical bias to regard this condition as symptomatic of a basic underlying emotional difficulty. No attempt was made to change or eliminate the speech block of the stutterers. Psychotherapy on both the individual and group levels was administered in daily conferences and meetings, in which the individual was encouraged to verbalize his anxieties and fears and to objectify them in relation to his early childhood experiences. The commonness of a certain amount of worry and anxiety, even in normal persons, was stressed. Narcosynthesis was employed in several instances where the stutterer was inhibited to such an extent that he was unable to speak of terrifying experiences, such as might have occurred in combat. In the group therapy meetings projection techniques were used frequently where one or several patients expressed the emotional problems common to many. In addition, a comprehensive program of reconditioning was instituted which occupied the major part of the day. This included graduated physical, educational, vocational, mental and diversional rehabilitation.

At McGuire General Hospital, the Speech Clinic was under the supervision of a neurosurgeon (WGP), but the actual therapy for stutterers was carried out by the speech pathologist (WH). Before treatment was initiated, a complete case history was obtained from the patient and a thorough study made of the personality structure, the stutterer's attitude toward his impediment and his environment, and fundamental affective and cognitive features of his mental life. The Wechsler-Bellevue intelligence scale was administered routinely and served both as a diagnostic instrument and as a useful index of the patient's intellectual capacity. To arrive at a clear understanding of the patient's spontaneous tendencies which form the basis of his personality structure, projection techniques, such as the Rorschach ink blot, thematic apperception and the Bender-Gestalt tests were employed. Where indicated, the patients were given aptitude and/or achievement exercises by the Vocational Guidance Department of the hospital.

Each patient was seen by the neurosurgeon once a week and by the speech pathologist for a one-hour session three times a week. During approximately the first three weeks, the periods were devoted chiefly to negative practice by the patient who attempted to imitate his speech blocks consciously. During this time, he was also given non-directive therapy, the chief aim of which was to help him learn to live with himself and his speech defect, and to aid him in making more objective evalutions of his speech and of the reactions of those about him. In this phase of treatment, the tenets of general semantics were liberally expounded.

After the patient had learned to simulate his speech blocks through negative practice with a mirror, he was introduced to a more relaxed and flowing speech pattern involving voluntary, effortless repetitions of the initial sounds of the words. Several class hours were spent simply in teaching the patient to become proficient in this method. By this time, extensive 'situation' practice was being introduced, wherein the patient used the new pattern voluntarily in a variety of realistic environmental situations. It was found extremely important in this aspect of the treatment that the speech pathologist accompany the patient in every speech assignment if the most satisfactory results were to be obtained.

One other phase of the treatment at this clinic which deserves mention involved weekly attendance at the meetings of the Richmond Chapter of the 'Demosthenes Club' (organized by the

speech pathologist). The majority of the members of this club were civilian adult stutterers, many of whom had taken speech correction work from private practitioners, or had attended the various commercial schools for stutterers. At each meeting all members were required to speak before the group and encouraged to voice their fears and problems, related to speech or otherwise. Considerable practice in extemporaneous speech-making was also given. It is felt that this regular contact with a civilian group was particularly helpful to the Army stutterers, all of whom expected to be released from the Service in relatively short periods of time.

Conclusion

IN CONCLUSION, it appears to the writers that the Army has been amply justified in inducting stutterers into the Armed Forces. The men we have observed with this symptom have generally made a good adjustment and have served their country well, in combat, communication zone and Zone of Interior assignments. We feel, however, that many of these soldiers would have profited by speech training as demonstrated in this series, if it had been practicable for the Army to provide such instruction on a large scale. Should the policy of universal military duty be inaugurated in this country, we suggest that a more adequate and standardized test service for speech defectives be organized by the Surgeon General, and that those stutterers and other speech defectives otherwise capable of military service be sent to special centers where speech correction would be provided on a systematic basis.

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CORRECTION

Due to a clerical error, which is being corrected in the forthcoming 1947 Directory of the Association, Mr. W. Arthur Cable, Head, Department of Speech, University of Arizona, was referred to in the footnote on page 225 of the September, 1946, issue of the *Journal* as having received the Ph.D. degree from the University of Chicago. The degree should have been specified as Ph.B., according to information received from Mr. **Cable.**

The Editor.

JOURNAL OF SPEECH DISORDERS, 1946, **11**, 309-320

Testing and Correcting Cleft Palate Speech

Mary Wootton Masland*

IT IS A FACT which has been too seldom recognized that mere closure of the cleft in the palate of an individual with cleft palate speech does not guarantee that his speech will improve automatically. Another fact, too seldom recognized, is that the improvement of the speech of a cleft palate patient, whose cleft has been closed, usually requires not only the effort of the individual himself, but that of a speech correctionist. Correction of cleft palate speech is a branch of speech therapy for which fewer techniques have been evolved than for the correction of more common speech defects. The purposes of the present study, which was carried on during a year and a half at the speech clinic of the Children's Memorial Hospital of Montreal, Canada, were: (1) to devise objective tests for analyzing the difficulties and recording the progress of individuals with cleft palate speech and (2) to work out methods of correcting cleft palate speech.

There are two main problems in the correction of cleft palate speech. The first and lesser one, that of correcting faulty articulation, can usually be solved by the well-known methods of teaching correct positions of the speech organs for all sounds. Some young cleft palate patients articulate no consonants. Older children and adults may substitute pharyngeal and nasal fricatives for the correct ones and the glottal stop for plosives, particularly for *k* and *g*. However, it sometimes happens that even without speech therapy, an individual with a cleft palate will, through the effort to make his speech intelligible, articulate all the consonants correctly, even though his or her speech may still be characterized by the nasal escape of air.

Correct articulation, whether arrived at spontaneously or through the efforts of a speech therapist, does not insure normal speech unless the mechanism for closing the nasal port is functioning correctly. This brings us to the second and more difficult problem in the correction of cleft palate speech: namely, that of teaching the pupil to close the opening to the nasal cavity. During normal speech, the nasal port is closed during the articulation of all consonants except the nasals, *m*, *n*, and *ng*. Therefore, no air passes through the nose except during the articulation of these sounds. Cleft palate speech, however, is characterized by the fact that air escapes through the nose during the articulation of all consonants and it is the sound of air rushing through the nostrils which gives cleft palate speech its characteristic quality of nasal aspirate. Vowels sound defective probably because of altered resonance. However, it is chiefly because of distortion of the consonants, rather than of vowels, that cleft palate speech sounds so abnormal. This is because consonants, particularly plosives, require positive air pressure in the mouth, as Stetson (4) has demonstrated. If there is a leak through to

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the nasal cavity, it is impossible to build up sufficient pressure in the mouth, and air streams through the nose instead, producing a characteristic nasal aspirate accompaniment for all consonants except *m, n,* and *ng*. When the other consonants are articulated correctly, there is a suggestion of the correct sound, but this is so masked by the loud nasal hissing accompaniment that the effect is definitely that of defective speech.

There are two ways in which the possibility of a functioning 'valve' for opening and closing the nasal port may be given the cleft palate patient. (The term 'nasal port' is used herein to designate the opening between the nasal pharynx and the oral pharynx.) The first is operative, the second is prosthetic closure, that is, the fitting of an obturator into the opening. Often a combination of surgery and prosthesis is necessary to provide the patient with the equipment which will make complete closure of the opening possible.

It is important to realize that the closing of the nasal port during speech is accomplished not entirely by the trap-door-like action in closing the flap of the soft palate against the nasopharyngeal wall, but also partly by the sphincter-like contraction of a ring of muscles of which the soft palate is only a part. The function of the other muscles of the ring was taken into account by Fitz-Gibbon (**1**), who devised an appliance, the main purpose of which is to provide a bulb for these muscles to grasp. By learning to contract the ring of muscles so as to grasp the bulb of the obturator, the patient manages to close the nasal port. This type of obturator, or a modification of it, was used by each of the four patients whose case histories are presented below.

Regardless of whether the patient has acquired the means of closing the nasal port by surgical operation, by prosthesis, or by a combination of the two, the fact that such a closure is *possible* does not mean that it will be made automatically during speech. On the contrary, most patients need not only an explanation of the mechanism involved, but instruction and practice as well for a considerable length of time.

BEFORE the speech therapist begins the process of speech re-education, it is important to know whether it is at all possible for the individual to close his nasal port. Both surgeon and prosthetist need an indication of whether their efforts to give the patient a functioning valve have been successful. If he can repeat the plosive *pu,* for example, at conversational speed without the nasal escape of air, it is more than probable that he can learn to prevent nasal escape during the articulation of all other sounds. Since it is difficult for the naked ear to detect small degrees of nasal escape of air, it is desirable, for test and practice purposes, to use some device for detecting whether or not air flows through the nose during the articulation of what are normally non-nasal sounds.

Various instruments have been used to detect nasal escape of air during speech. A lighted candle held before the nose in such a way that the flame flickers when air escapes has been used. This method is inaccurate and necessitates more careful screening of the mouth than is usually possible. Other devices, such as a cold mirror or a feather on a card, held beneath the nostrils are useful but it is difficult for a patient to distinguish between actual nasal escape of air during speech and the small puff of air which escapes from the nostrils of even normal speakers at the end of speech. This puff occurs when the muscles for closing the nasal port relax their 'speech posture,' and open the nasal port suddenly. A rather more precise instrument for detecting nasal escape of air is the stethoscope. If a nasal 'olive,' connected with a stethoscope

by rubber tubing, is placed in one nostril of the patient, nasal escape of air may be heard quite clearly through the stethoscope. However, there is one disadvantage to this method of detecting nasal escape; namely, the fact that one is listening to both speech and nasal escape of air at once and it is sometimes difficult for the observer to distinguish between the two auditory stimuli.

An easier method, both for patient and speech therapist, is the use of the pneumoscope, a delicate instrument which gives an accurate visual indication of nasal escape of air. The essential part of the pneumoscope is the pneumodeik, by means of which the movements of a bellows-like tambour are transmitted by a pulley device to a lever (**3**). Whenever there is a change in air pressure within the tambour, the lever moves. To make a pneumoscope, a p n e u m o d e i k is mounted behind an opaque glass screen in such a way that a bright light behind the lever casts a shadow on the screen. (See Fig. 1.) The pneumodeik is connected by rubber tubing with a glass 'olive' which the patient places in his nostril. Any flow of air through the nose is therefore made visible immediately by a movement of the lever, which is seen clearly on the glass screen. For example, when even a normal speaker using this device says, 'no, no, no,' the lever flicks three times, once for each of the *n* sounds, since *n* is a nasal consonant. However, if a normal speaker says, *pu, pu, pu,* there is no movement of the lever, since *p* is a non-nasal consonant and requires pressure in the mouth but not in the nose. During the articulation

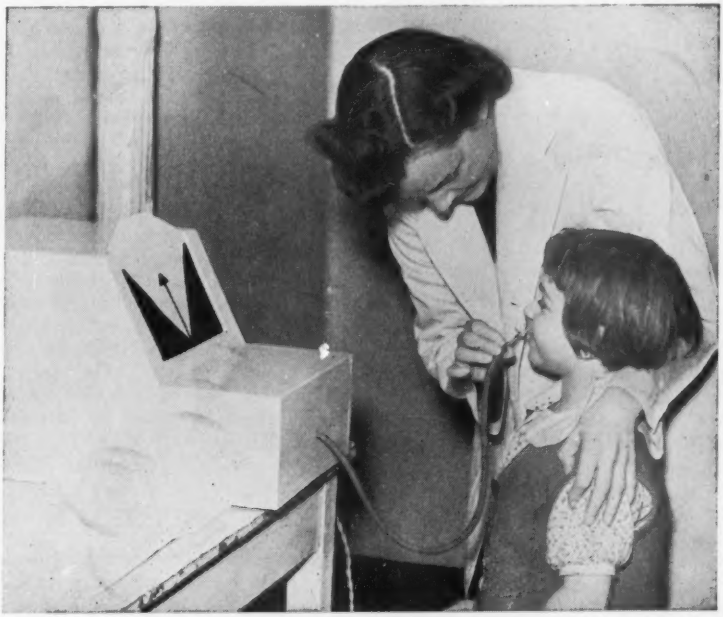

FIGURE 1. The pneumoscope. The nasal escape of air during speech is detected by a movement of the lever. This device is particularly useful in testing and correcting cleft palate speech.

of vowels, on the other hand, there is no rise in pressure in the mouth since the oral cavity is open. If an individual with cleft palate speech says, *pu, pu, pu,* the lever flicks three times because the nasal port is open and any pressure in the mouth is transmitted immediately to the nose. In fact, the two cavities are as one.

Procedure

THE TESTING procedure in this study was as follows. The patient was seated before the pneumoscope with the glass olive inserted in one nostril. He was then given a card with words printed on it and told to read them in groups at a demonstrated rate; viz., slow conversational speed, about 1.4 syllables per second. The test words were: (1) no, man, ham, ring; (2) peg, tap, bed, Bob, tap, cat, doll, bed; (3) cat, thick, goose, peg, fish, laugh, very, shave; (4) sour, goose, zoo, rose, shave, fish, treasure, rouge; (5) thick, with, the, soothe, church, judge, laugh, doll; (6) rose, sour. The particular sounds which each group was designed to test were as follows: (1) *n-, m-, -n, -m, -ng;* (2) *p-, -p, b-, -b, t-, -t, d-, -d;* (3) *k-, -k, g-, -g, f-, -f, v-, -v;* (4) *s-, -s, z-, -z, sh-, -sh, zh-, -zh;* (5) *th-, -th, th-, -th, ch-, -ch, dj-, -dj, l-, -l;* (6) *r-, -r.* Group (1) was included in order to test the apparatus. If the lever moved during the articulation of these nasal sounds, it was known that nothing was blocking the connecting tubes. If the patient could not read, he was asked to repeat the words after the speech therapist who noted on a record form those sounds during the articulation of which the lever moved; that is, sounds which were accompanied by the nasal escape of air. If she was uncertain as to which sound it was, she had the patient repeat the group. If she was still uncertain, she had him repeat a single word or syllable several times in quick succession. The reason for not using isolated words was that it was found that when the velum relaxed at the end of speech there was a puff of air through the nose, which caused the lever to flick. Since the movement occurred immediately after the word, it was sometimes difficult to determine whether there had also been nasal escape of air during the word. When the words or syllables were spoken at conversational rate, however, there was only one such puff and that occurred at the end of the group. This puff occurs in normal speech at the end of a sentence.

If the above test demonstrated that there was nasal escape of air during speech, it was explained to the patient that he might, by voluntary effort, be able to close the nasal port and thus keep the lever still. The teacher demonstrated how she could say words containing no nasal consonants without moving the lever. The patient was then asked to puff out his cheeks and try to keep the lever still. If this effort was successful, it was explained that this meant that the opening to the nose could be closed during speech. The patient was then instructed to practice saying *pu, pu, pu,* without nasal escape of air. Very often he succeeded in eliminating nasal escape or reducing the amount considerably after a few attempts. (See Fig. 4.) The indication was that if the patient could manage some voluntary control over the soft palate and other muscles and so close the nasal port, he might, with practice, extend this control to include all speech sounds. In such cases, the prognosis for successful speech therapy was considered good.

After a quick test with the pneumoscope, the speech of each patient was recorded kymographically. Two ink-writing pneumodeiks were arranged in such a way as to record changes in air pressure in mouth and nose simultaneously. (See Fig. 2.) The record from the nose was designated by N; that from the mouth by M. On the speech record of a normal individual,

FIGURE 2. The kymograph. Ink-writing levers mounted on pneumodeiks record air pressure in mouth and nose, respectively. Changes in air pressure in the mouth are transmitted through a bent copper tube which is connected with the pneumodeik by rubber tubing. Changes in air pressure in the nose are transmitted through a glass 'olive' connected with the pneumodeik by rubber tubing.

N should be a straight line and M a fluctuating one. (See Fig. 3.) The M line deviates from a straight line and shows a rise in pressure during the articulation of each consonant except *l* and *r* which are semi-vowels. There is no deviation in the M record during the articulation of vowels, since the mouth is open and the pressure zero. The group number of each group of words was noted on the record as it was spoken, so that it was possible to identify the words later by the consonant details (4). It was then possible to determine the consonants during the articulation of which air had been escaping through the nose.

THE APPARATUS and technique used in the kymographic recording were as follows: Changes of air pressure in the mouth were recorded by means of a small copper mouth tube, the outside end of which was connected by rubber tubing with an ink-writing pneumodeik. In the same way, changes of air pressure in the nose were transmitted to a second pneumodeik by means of a glass olive held in the patient's nostril and connected with the pneumodeik by rubber tubing.

After the apparatus had been checked, a short period of practice was given in order to familiarize the patient with using both the mouth tube and nasal olive at once. The test words were said once or twice during this period. Records were then made as follows:

1. The test words were said, in groups, at conversational rate.

2. The patient was shown his first record; it was explained to him that the N line should be straight, and he was asked to repeat the test, watching the N lever

and trying to keep it still. This section was omitted for normal subjects.

3. While the patient watched the N lever, a test for voluntary control of the muscles closing the nasal port was given. The patient was instructed to repeat one syllable rapidly; e.g., *pu, pu, pu* . . . while he watched the N lever and tried to hold it still. (See Fig. 4.) During the course of speech training, this test was used for the different sounds with which the patient was having difficulty. In this way, a permanent record of the degree of success the patient was attaining in his pneumoscope practice was obtained.

4. Finally, if the subject was a cleft palate patient who had been fitted with an obturator, he was asked to remove the appliance and a record was made as follows: (a) The test words were said twice, with the patient first not watching, and then watching the N lever. (b) The test for voluntary control was repeated. These tests without the obturator were recorded for purposes of comparison with those made with the obturator in place. Such records were found valuable in explaining to the patient the mechanical factors involved in the problem of correcting his speech.

The above procedure was carried out on a group of 10 normal adult subjects and about 25 cleft palate patients at the Speech Clinic of The Children's Memorial Hospital. Of the latter group, complete sets of kymograph records were available on only

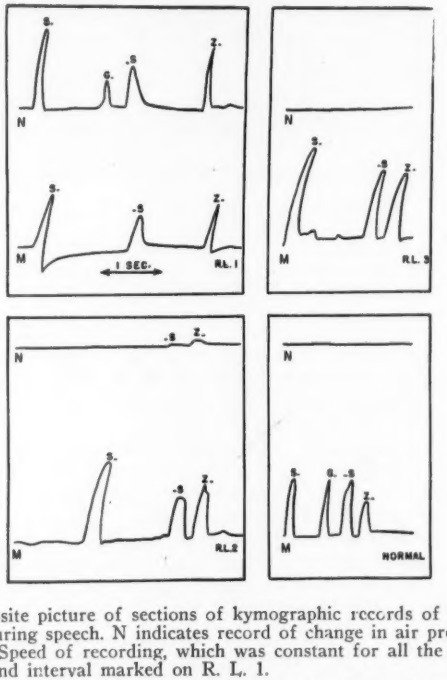

FIGURE 3. A composite picture of sections of kymographic records of the test for nasal escape of air during speech. N indicates record of change in air pressure in the nose during speech. Speed of recording, which was constant for all the tests, is indicated by the one-second interval marked on R. L. 1.

R. L. 1 is a section of the record of a cleft palate patient before speech training was begun. The words spoken were 'sour, goose, zoo.' R. L. 2 is a record of the same words spoken by the patient after six weeks of pneumoscope practice; R. L. 3 the same after three months. R. L. 1 shows nasal escape of air indicated by great rise in pressure in the nose during articulation of *s-, g-, -s, z-;* R. L. 2 shows a small nasal escape of air during articulation of *-s,* and *z-;* R. L. 3 shows no nasal escape of air. The fourth record, that of a normal speaker, shows no nasal escape of air during articulation of the words 'sour, goose, zoo.'

four patients at the time of writing. Pneumoscope testing and practice was a routine procedure for nearly all cleft palate patients, however, and kymograph testing was done at intervals with a large percentage of these patients.

Results

THE RESULTS of the kymographic study were as follows. The records of the 10 normal subjects showed a slight nasal escape of air on an average of two consonants. The deflection of the N line of the record, although almost negligible, occurred consistently on certain sounds for each normal individual; e.g., one subject showed slight nasal escape of air on *sh*; another on *t*. Of the 10 normal subjects, the records of two showed nasal escape on no sounds, two on one, three on two, one on three, and one on six. All the consonants on which normal subjects showed nasal escape of air are 'front' sounds: labials, dentals, and linguo-dentals. This may suggest difficulty in articulating these sounds with mouth tube in place.

Since the pressure of the pneumodeik lever on the kymograph paper was not constant for each recording, the amplitude of the lever's swing for a constant amount of nasal escape of air varied. It was therefore impossible to make exact measurements of the amount of nasal escape. However, inspection showed that in no case did the amount of deflection of the N line in the records of the normal subjects approach the amplitude of deflection of the N line of cleft palate patients, except in those records of cleft palate patients where the amount of nasal escape on certain sounds was so small as to be impossible for the naked ear to detect.

The record of the cleft palate patients indicated gradual progress in the elimination of nasal escape during the course of speeech therapy. Figure 3 is a composite picture of four recordings, three of the same cleft palate patient, R. L., and one of a normal speaker. The words spoken were 'sour, goose, zoo.' R. L. 1 shows a section of the record taken, with obturator in place, before speech training was begun. Inspection shows the N and M records to be almost identical in detail, an indication that the nasal and oral cavities are practically one since the patient has not yet learned to manipulate the obturator in such a manner as to close the nasal port. The fact that the N record shows no rise in air pressure in the mouth during the articulation of *g* indicates that the end of the mouth tube was in front of the point of contact of the tongue with the roof of the mouth. In the whole test, nasal escape of air occurred 36 times; that is, on all sounds tested. R. L. 2, a record taken after six weeks of daily pneumoscope practice, with lessons twice weekly, showed nasal escape only 11 times. In this section, there was nasal escape of air during articulation of the *s* of *'goose,'* and the *z* of *'zoo.'* R. L. 3, a record made near the end of the third month of speech training, showed nasal escape in only 10 sounds and in each of these occurrences the amount of nasal escape was very small. In the section shown here, there was no escape of air. The patient's speech at this time sounded almost normal. In a subsequent test, not shown on Figure 3, her record showed nasal escape on only 4 of the 36 sounds tested. Here also, the amount of nasal escape was practically negligible and her speech at this time sounded perfectly normal.

Figure 4 shows the record of a kymographic test for voluntary control of the muscles closing the nasal port. The patient, L. M., was a boy of 12, who had had several years of speech instruction but had never used the pneumoscope for practice. He was asked to repeat the syllable *pu* at a fairly rapid rate in groups of about five syllables each. He was instructed to watch the lever recording from the

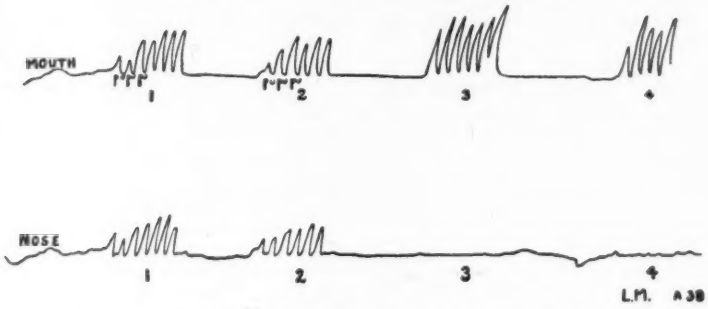

FIGURE 4. Kymographic test for voluntary control of muscles used to close the nasal port. Patient said *pu, pu, pu, . . .* at rapid rate, watching the lever recording from the nose, N, and trying to keep it from moving. 1 and 2 show unsuccessful attempts, 3 and 4 successful attempts.

nose and to try to keep it from moving. Examination of the record shows that the first and second attempts were unsuccessful and the changes in air pressure in mouth and nose were almost identical, an indication that the nasal port was open. However, on the third and fourth attempts the patient succeeded in eliminating the flow of air through the nose almost completely. The record was then interpreted to the patient and the difference between the successful and unsuccessful attempts emphasized. This type of test is useful both as an indication of the prognosis for speech training and as a method of demonstrating to the patient the goal he is striving to achieve; namely, the elimination of nasal escape of air during speech.

Figure 5 is a composite table of the test performance of three adult cleft palate patients, R. L., K. S., and R. N., during the course of speech training. All had pneumoscope practice as part of their training. Their individual case histories, together with that of one other adult cleft palate patient, are given below. Figure 5 merely shows the number of occurrences of nasal escape of air during kymograph tests taken at various intervals during their training. Each test was done twice; the first time while the patient looked away from the recording, the second while he watched the N lever and tried to hold it still.

Comparison of the results of early tests with those of tests made after some months of training shows that in each case, the number of occurrences of nasal escape of air decreased. There is also a rather striking difference between the score of the patient when he was not watching the N lever and that when he was watching it and trying to prevent it from moving. With only one exception, namely K. S. after four and one-half months of training, the number of occurrences of nasal escape when the patient was watching was smaller than the number when he was not. This seems a good indication that it is advisable for a cleft palate patient having speech training to use some device which will give him a visual indication of the presence or absence of nasal escape of air. The present writer has found the pneumoscope very valuable as a teaching device because of its great sensitivity and the fact that it indicates not only the presence or absence of air flow, but also, within rough limits, the amount.

For home practice, the patient can be provided with a device less expensive but similar in principle. A piece of thin rubber stretched over

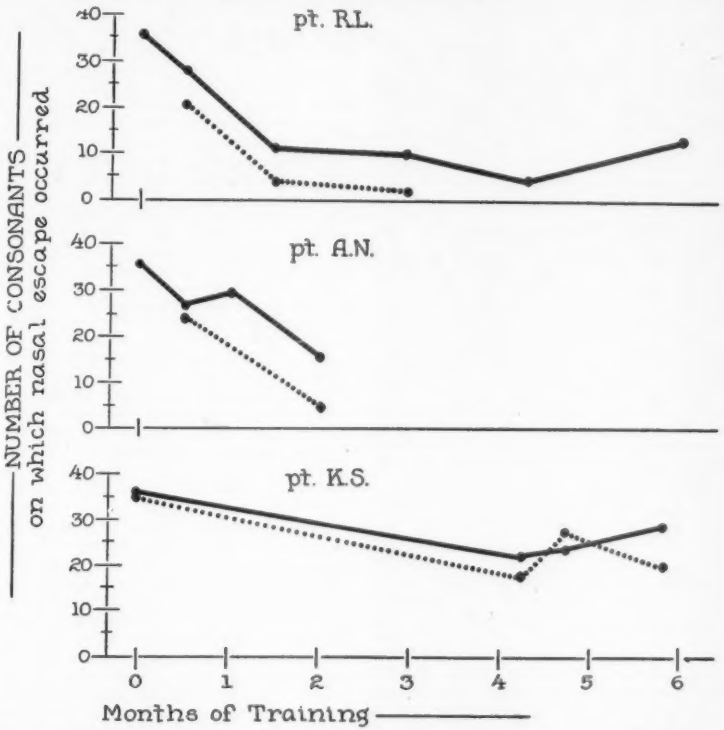

FIGURE 5. The speech progress of cleft palate patients R. L., K. S. and R. N., in terms of presence or absence of nasal escape of air during articulation of the test words. The solid line indicates the results of kymograph tests during which the patients did not watch the lever recording from the nose. The dotted line indicates the results of those tests during which they did watch the lever recording from the nose, and tried to keep it from moving. Note that the nasal escape of air was much less frequent when the patient had a visual indication of success or failure. In fact, in only one instance, that of K. S. in the fourth month, was there greater incidence of nasal escape while the patient was watching the lever. With very few exceptions, the air pressure changes in mouth and nose were simultaneous and identical in detail, when nasal ecsape of air occurred at all.

the mouth of a thistle funnel provides the tambour. The stem of the thistle funnel is connected by rubber tubing with a glass olive, which the patient holds in his nostril while practicing. The passage of even a very slight amount of air through the nostril may be detected by placing the finger lightly on the tambour. This device was developed in the Psychological Laboratory at Oberlin College.

CASE HISTORIES

THE FOLLOWING are case histories of four adult cleft palate patients. The speech progress of three is summarized in Figure 5. A quantitative comparison of the progress of the speech improvement of the fourth patient with that of the other three patients is impossible because her speech correction was completed before the present tests were developed.

Case No. 1

R. L. was a woman 32 years old. In spite of operative attempts to close the cleft in her palate, there was still a large V-shaped aperture at the back of the roof of the mouth. In March, 1940, when she first came to the Children's Memorial Hospital speech clinic, it was decided that a Fitz-Gibbon-type appliance should be made for her and that she should have subsequent intensive speech therapy.

The patient was a slight, active individual who had become increasingly discouraged as the handicapping effects of her speech disability upon her economic and social life became more and more evident. She had studied stenography but was unable to obtain a secretarial position because her telephone speech was unintelligible. Her actual articulation, that is, the position of lips, tongue, etc., was correct for all speech sounds except *sh*, voiced and unvoiced, and *ks*. However, her speech was so distorted by the nasal escape of air that it was practically unintelligible.

R. L. was given pneumoscope and kymograph tests and the 'voluntary control' test (see Figs. 3 and 4) to determine whether, with the obturator in place, it was possible for her to close the nasal port. At the time of her first tests (Fig. 3, R. L. 1) a large amount of air escaped through the nose during the articulation of every consonant—so much so that the records from mouth and nose were identical in appearance, even when the obturator was worn. However, in the test for voluntary control of the muscles closing the nasal port, 8 out of 11 attempts were successful. (Fig. 4 shows the record of the same test on another patient.) As is explained above, in this test the patient repeats the syllable *pu* at a conversational rate in groups of about five syllables each. A kymographic record of air pressure in the mouth and nose is made. The patient is instructed to watch the lever recording from the nose and to try to keep it from moving. Since R. L. was successful in holding the lever still, in other words, closing the nasal port in 8 out of 11 attempts, it was decided that the prognosis for speech therapy was good.

Because R. L. was unemployed, it was possible for her to come to the hospital daily for pneumoscope practice. She was instructed by the speech therapist for a half-hour period twice a week. The plan of training was to work systematically through the speech sounds, mastering one before another was attempted. The course of her progress may be followed in Fig. 5.

R. L. was an extremely cooperative and hard working pupil. A month and a half after speech training was started there was nasal escape of air during the articulation of only 11 of the 36 consonants in the test. A month later, there was nasal escape with only two consonants and the amount of nasal escape was almost negligible. Her speech improvement was so rapid that in three months the casual listener would have observed nothing extraordinary about her speech except possibly that she spoke rather slowly and carefully. At this time she applied for a stenographic position with a firm which had previously rejected her applications repeatedly. As her telephone speech was now perfectly intelligible, she was accepted immediately and was able to hold her own very well.

Case No. 2

Patient P. S. was a girl of 21, sullen in manner, unattractive in appearance, and dejected in spirit. She came to the speech clinic in tears because she had just lost her job and there seemed no prospect of finding another. A previous attempt to close the cleft in her palate by operation had been unsuccessful because of insufficient tissue.

The speech of P. S. at the time of her first test by the present writer was practically unintelligible, chiefly because of the great amount of nasal escape of air. As far as actual articulation was concerned, only three sounds, namely *ch*, *k*, and *g*, were defective. The patient substituted *sh* for *ch*, and either a glottal stop or a deep guttural plosive for *k* and *g*. After she had been fitted with a Fitz-Gibbon-type obturator, pneumoscope and kymograph tests revealed that the presence of the obturator made it possible for her to close the nasal port completely. This was accomplished by grasping the bulb of the obturator with the nasopharyngeal and other muscles which normally assist the soft palate in closing the nasal port. After the patient had been wearing the obturator for about three weeks, the 'voluntary control' test (see Fig. 4) showed that when saying *pu, pu, pu . . .*, she was able to eliminate nasal escape of air completely. At this time she was employed as a maid in the hospital and regular pneumoscope practice for about 20 minutes a day was begun. After one month of daily practice, a kymograph test showed no nasal escape of air except a very slight amount on initial *b*, *t*, and *d*, and on final *p*. Two months later there was nasal escape of air on no sound except initial *f*. The record was quite as good as that of a normal speaker and P. S.'s speech sounded perfectly normal at this time. The articulation defects mentioned above had been corrected early in the training period.

The most remarkable feature of P. S.'s case was the almost miraculous change in her personality as her speech improved.

From a sullen, apparently stupid, individual she became a bright, attractive girl and when last heard of she was studying conversational French.

Case No. 3

K. S. was a man of 35, to whose old obturator a Fitz-Gibbon-type bulb had been added three months before speech training was begun. He had had speech instruction, off and on, all his life and his articulation was perfect. However, a very marked amount of nasal escape of air made his speech almost unintelligible. K. S. was a retiring, ineffectual sort of individual, quite disturbed emotionally about his speech defect but seemingly incapable of putting forth any great effort to correct it. In spite of the fact that he could ill afford private speech lessons, he failed to carry out more than the most dilatory home practice.

The first pneumoscope and kymograph tests showed nasal escape of air during the articulation of every consonant. The 'voluntary control' test, however, revealed that he could say a whispered *pu* and *ku* without nasal escape of air. Speech training was therefore initiated and the patient had a half-hour lesson twice a week for four months. At the end of this time, he was able to eliminate nasal escape on 18 of the 36 consonants of the test if he watched the lever recording from the nose. However, when he did not watch it, nasal escape was absent on only 14 sounds. (See Fig. 5.) His score on this test was the best made during the entire course of his speech training. During the next two months there was a slight regression in his speech performance and his speech was still far from normal when his lessons with the present writer were discontinued.

It is difficult to decide whether the chief reason for K. S.'s failure was lack of sufficient motivation, improper fitting of the obturator, or lack of sufficient muscular control to grasp the obturator in the required manner. Probably each of these factors contributed.

Case No. 4

The fourth patient, R. N., was a college student, 20 years old. His articulation was correct for all sounds except *k* and *g*, for which he substituted the glottal stop. At the Children's Memorial Hospital, he was fitted with a Fitz-Gibbon-type obturator and given pneumographic and kymographic tests to determine whether speech training would be worthwhile. The kymographic test for consonants revealed that even with the obturator in place, there was nasal escape of air during the articulation of every consonant. However, the 'voluntary control' test revealed that the subject could control the muscles of the nasopharynx sufficiently well to eliminate nasal escape completely during the articulation of *bu*. On the basis of this test, it was decided to give him speech training.

R. N. had one lesson a week at the speech clinic and was given a small tambour device to substitute for the pneumoscope in his home practice since he lived out of town and could not come to the hospital to use the pneumoscope. This device is described above.

R. N. made steady improvement during the two months under the writer's instruction and when the lessons were discontinued had reached a point at which there was nasal escape during the articulation of only five consonants, if he watched the N recording lever while the test was in progress. However, when he was not watching the lever there was nasal escape during the articulation of 16 consonants. This test afforded an excellent demonstration of the value of having a visual indication of the success or failure of the patient's efforts to close the nasal port. R. N. continued lessons with the present writer's successor at the Children's Memorial Hospital speech clinic.

Summary of Clinical Observations

In observation of the conversational speech and of the pneumoscope practice of cleft palate patients the following points were noted:

1. The tendency by some patients to reduce air pressure in the mouth so that the lever of the pneumoscope will not move results sometimes in inaudibility, sometimes in sonantifying of surds.

2. Some vowel positions seem to facilitate closure on the bulb of a Fitz-Gibbon-type obturator. For the patient K. S., *oo* was the easiest vowel on which to eliminate nasal escape of air, *o* the next.

3. The patient K. S. seemed to talk better if he talked loudly. It is probable that the increased loudness involved greater effort of all muscles, hence better closure on the bulb by the muscles used in grasping it.

4. When a patient has begun to master constriction of the muscles closing the nasal port, this new habit often carries over to the sounds *m*, *n*,

and *ng*. He then needs special practice on these sounds to master the technique of opening the nasal port for these sounds.

5. Several patients with a posterior bulb type of appliance complained of blockage of the nasal port when mucus, from post-nasal drip, gathered on the bulb.

In conclusion, it may be said that the pneumoscope test is quickly and easily performed, and provides an accurate means of determining whether or not there is nasal escape of air during speech. The kymograph test is valuable as a permanent record of speech performance and as such can be used as a measure of progress. It is, however, rather more difficult and time-consuming to carry out and is most valuable for purposes of research. As a clinical instrument the pneumoscope is more useful.

Summary

1. A word test, designed to discover those consonants during the articulation of which nasal escape occurs, was given 25 cleft palate patients and 10 normal adults.

2. The nasal escape of air during the performance of this test by cleft palate patients was demonstrated by the movement of a lever connected with the tambour of a pneumoscope.

3. Efforts of patients to reduce or eliminate the nasal escape of air were consistently more successful when visual indication of success or failure was provided by the pneumoscope. This instrument was therefore very useful in speech therapy with cleft palate patients.

4. Simultaneous kymographic records of air pressure changes in the mouth and nose, respectively, during articulation of the test words provided objective evidence which was used for analyzing the speech defects of the patients.

5. Similar kymographic records were made at intervals during the course of speech training and the number of consonants during the articulation of which nasal escape of air occurred was used as a measure of progress. The records of four cleft palate patients were complete enough to warrant a detailed description in this paper.

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Paragnosia and Paraphasia

Mary Huber*

THE symptom complex of Wernicke presents perhaps the most generalized and sensational disintegration of linguistic activity that can be classified under the category of aphasia. This syndrome includes a loss of comprehension of written words, loss of comprehension of spoken words, and the inability to transcribe one's thoughts into written symbols. The phenomenon of paraphasia, that is, the substitution of an inappropriate word or sound for the intended one, is also a distinguishing feature of Wernicke's aphasia.

Nielsen (**20**) has used the term 'acoustic verbal paragnosia' to designate a receptive form of paraphasia. Dercum (**3**) describes the so-called word-deaf individual as having normal auditory acuity but being incapable of comprehending words spoken before him. He resembles an individual transported into a foreign country, the language of which he does not understand. The words strike his ears as different and varied sounds, but not as representing ideas.

The neurologist, Lordat, (**18**,2) who in 1828 became aphasic, complained that the speech of others came too fast for him to comprehend it. Another sensory dysphasic, classified by Hemphil and Stengel (**9**) as a case of 'pure word-deafness' offered the following description of his difficulties in auditory comprehension.

> 'It does not finish. It's one on top of the other. The words split themselves up. I hear what you are saying but the pronunciation does not finish. The voices seem to be as clear as they should be. I can hear you quite plainly but all come up on top. I can hear you dead plain but I cannot get what you say. The noises are not quite natural. I hear your voice but not the words. . . . It does not pronounce itself.'

Bastian (**1**,23) has been cited as the first to recognize the relationship of defective auditory perception to speech production; he introduced the term 'jargonaphasia' to indicate the conglomeration of syllables, words, and phrases strung together without order or meaning which is a striking accompaniment of certain forms of sensory aphasia.

The manifestation of perseveration is so frequently observable in paraphasic phenomena that it deserves consideration in this analysis. Stedman (**23**) defines perseveration as 'The constant repetition of a meaningless word or phrase.' Kurt Goldstein (**5**, 85, 86) considers both the motor and sensory character of perseveration in discussing the symptoms of cortical disintegration: 'If excitation has occurred, . . . it spreads abnormally and lasts an abnormally long time. . . . In place of a circumscribed response, corresponding to the circumscribed stimulus, we note a more extensive and diffused response. For example, the patient is unable to locate the precise point stimulated on his skin. On the other hand there is a long aftersensation. Such aftersensation occurs typically in lesions of the central sensory areas. We find the corresponding phenomenon in the motor field, in tonic innervations, in repetition of the same movements, reiteration in

*This address was presented at the 1945 Convention of the American Speech Correction Association. It is a report based on a doctoral thesis prepared at the University of Wisconsin under the title "A Phonetic Analysis of Paragnosia and Paraphasia in Receptive Dysphasics." The author is now in private practice at 125 East 74th Street, Brooklyn 2, New York.

reflexes (clonus) etc. A word grasped by an aphasic with great difficulty sticks and influences subsequent performances, giving rise to perseveration.'

Another type of perseveration that comes to the surface in paraphasic responses appears to be a sort of association fusion or interference. Kleist (**2**) has compared it to the free flow of ideas occurring in the dream state. Foerster and Goldstein (**4**) had it in mind when they referred to the aphasic patient's characteristic rigidity or slowness in shifting from one activity to another. The response of one aphasic subject examined by the present investigator illustrates well this association type of perseveration or interference. In repeating after the examiner a series of words he responded correctly to the stimulus word *iron,* but to the next stimulus word which was *ladder* he responded with the word *electricity* which appears to have been called up by the previous word *iron.*

THE fact that individual sounds previously heard or uttered may perseverate into consecutive sensations or utterances illustrates one of the mechanisms responsible for the aphasic's linguistic incomprehension and also the frequent occurrence of neologisms in his paraphasic speech. Curran and Schilder, (**2**) in discussing paraphasic signs in diffuse lesions of the brain cite the responses of a patient in whom excitation, flightiness and euphoria occurred simultaneously in connection with a lesion of the Wernicke region. These conditions resulted in the use of unusual words which led to unusual thoughts. The following conversation was reported:

Examiner pointing to a ring: 'What is this?'

Patient: 'It's a Dutch ring, will you give me a drink or something?'

Examiner, pointing to a pen: 'What is this?'

Patient: 'All right. That's a new kind of ounce, a pen writing something. Give me a pence of something.'

Examiner, pointing to a watch: 'What is this?'

Patient: 'Right time, come on, will you?'

Examiner, showing his thumb: 'What is this?'

Patient: 'A small hand.'

Examiner: 'Put your left hand on your right ear.'

Patient: 'Gimme a little ear.'

Curran and Schilder (**2**) also cite Kleist's term 'paralogia' referring to thought and speech disturbances resulting from lesions of the temporal and occipital lobes that resembled schizophrenic linguistic manifestations. Instead of the correct representation a wrong word is produced or only part of it comes into consciousness. Sometimes the responses are fused. Kleist relates these manifestations to paraphasia which he defines as a disturbance in the process of thinking and representing before the final verbal formulation is made. This conception fits in well with the results of the present investigation which indicates that much paraphasic phenomena cannot be differentiated as either sensory or motor in the strict sense of these terms.

Gray (**7**) in a study of the minimum duration of perceptible speech sounds, discovered that the ability to identify sounds of short duration may be an indication of the ability to recognize fine shadings in the sounds of connected speech. In this connection it is important to remember that a generalized slowing down of the functions of the central nervous system inevitably accompanies a lesion in any part of that system. The organism so affected exhibits greater inconstancy of reaction time to changeable stimuli than does the normal. The patient's complaint that ordinary conversation comes too fast for him may

well be due to some obscure chronological inexactitute in the receptive functions resulting from cortical or subcortical injury.

There is the possibility that acoustic agnosia may, indirectly in the form of a long aftersensation or even a delayed perception, be responsible for some paraphasic manifestations. Evidences of such delayed responses occur frequently throughout the present investigation which now enters the discussion.

OCCASIONAL verbatim reports of paraphasic speech that have occurred in the literature on aphasia and direct experience with paraphasic individuals have caused the present investigator to wonder if a more systematic approach to the problem might not be made through a phonetic analysis of paragnosia and paraphasia. It was finally decided to begin with an investigation of the patient's ability to repeat after the examiner a series of verbal symbols classified from the standpoint of making a critical analysis of the difficulties they represent, either in perception or initiation of the response.

In selecting appropriate subjects for this testing program it was necessary to establish some preliminary criteria which would help to minimize the possibility of unwittingly including individuals whose aphasic difficulties were predominantly motor. The six subjects upon whom the tests were performed had all been given a neurological diagnosis of sensory aphasia. None of these patients, at the time of the tests, exhibited either a right or left sided spastic hemiplegia. There was no evidence of apraxic difficulty in the peripheral speech mechanisms of any of the six subjects.

A further preliminary measure instituted to establish with certainty that we were dealing with receptive problems was a sentence comprehension test. A list of 24 questions representing various levels of difficulty were read aloud to the subject five different times, totalling altogether 120 questions. To each question the subject was required to give merely an affirmative or negative response by shaking his head or saying 'yes' or 'no', according to which he believed to be the correct reply. None of the subjects included in this study was able to respond correctly to more than 92 questions out of the total of 120.

Every subject included in this investigation exhibited paraphasia or jargonaphasia. At one time or another all of them had been observed to say whole phrases and sentences perfectly. Since the results of the following tests are considered in the light of the subject's ability to reproduce what he hears, we are aware that what we may be testing may not always be perception, but quite frequently impaired formulation or initiation. It was hoped that in the course of the investigation we would discover under what conditions failure of perception is responsible for an incorrect response as compared to difficulties resulting from disturbed formulation or impaired initiation of a truly dysphasic nature, not seriously complicated by dyspraxic involvements.

THE GENERAL PLAN of the investigation was to analyze the paraphasia or jargonaphasia of the receptive dysphasic from a phonetic standpoint in order to discover what, if any, relationship exists between the patient's difficulties in perception of a specific verbal unit, i.e. an isolated sound, or word, and his ability to repeat it correctly after the examiner.

Briefly, the six tests were constructed with the following objectives in mind.

1. To discover whether vowels and consonants in isolation present less difficulty in preception or initiation than when combined into words.

2. To discover whether the subject experiences greater difficulty with surd than sonant consonants when pre-

sented either in isolation or combined into words.

3. To discover if the subject experiences less difficulty in perception and initiation of one-syllable words including only vowels and sonant consonants than with one-syllable words including some surd consonants and in what ways this difficulty, if any is manifested.

4. To observe whether the individual experiences more difficulty with two syllable words than with one syllable words and whether this difficulty has any relationship to the number of surd consonants occurring in the words.

5. To observe to what extent perseveration occurs and what forms it takes either in perception or initiation of the stimulus sounds or words.

6. To observe whether the *meaning* of any particular words appears to influence the character of the subject's responses.

The subject sat at a table opposite the examiner who uttered the sounds or words in an average conversational tone. No exaggerated movements of the articulatory mechanism were employed to aid the subject in arriving at the correct response. A correct response was recorded as plus; all other responses were transcribed into the International Phonetic Alphabet for later analysis. Each symbol was uttered only once.

THE CONTRIBUTIONS toward a better understanding of paragnosia and paraphasia, which a phonetic analysis of these phenomena under the conditions of the present investigation suggest may be briefly summarized.

1. It seems unlikely that, for dysphasics as a group, there are actually any particular vowel sounds that consistently represent more difficulty than others, either in perception or initiation. The results of this investigation do suggest, however, that both pure vowels and diphthongs which represent names of letters of the alphabet, hence more meaningful symbols, *may* be more easily perceived and initiated by *some* dysphasics.

2. That vowel sounds, presented in isolation, cause less difficulty, either in perception or initiation, than consonants, can be shown under the conditions of the present investigation with some dysphasics, but not with others. It seems to this investigator that a psychogenic factor enters into the problem at this stage. The tests were administered to two of the cases almost immediately after the cerebral insult occurred and these two subjects manifested less difficulty with vowels presented in isolation than any of the other subjects. In other words, they had had less time to adapt to their difficulties in perception and manifested less tendency to try to interpret the stimulus sounds; that is, as names of letters of the alphabet or words.

3. Four cases out of six experienced slightly less difficulty either in perception or initiation of surd consonants than sonant consonants when presented in isolation. It seems reasonable to assume that at this level of perception surd and sonant consonants represent about equal difficulty for receptive dysphasics as a group. The tendency to respond occasionally with the sonant equivalent of a surd consonant and vice versa suggests that the difficulty was that of initiation, not auditory imperception.

4. Whether one-syllable words including only sonant consonants present more or less difficulty than vowels or consonants presented in isolation appears to depend upon the following factors: (a) whether the receptive dysphasia is largely a difficulty of perception or comprehension, and (b) the subject's attitude as set in the testing situation.

The subcortical or 'pure' word-deaf patient may experience less difficulty in repeating stimulus sounds than

words, providing he does not try to interpret or comprehend what he hears.

The cortical or 'semantic' dysphasic appears to respond with more certainty to vowels and consonants presented in isolation than to words.

5. Under the conditions of the present investigation it appears that for receptive dysphasics as a group, one and two syllable words including surd consonants represent greater difficulty either in perception or initiation than one and two syllable words including only sonant consonants; as previously noted this difficulty with surd consonants is not apparent when the sounds are not combined in words.

6. The bi-labial surd and sonant consonants appear to represent less difficulty either in perception or initiation than other consonants.

7. The phenomena of perseveration and association interference appear to complicate the problem of differentiation between incorrect responses due to paragnosia and those resulting from impaired formulation or initiation. A phonetic analysis of the responses of six receptive dysphasics under the conditions of the present investigation indicate that disturbed associational processes frequently alter the character of a perception before the subject is able to formulate the correct response.

8. Perseveration, or some disturbance related to it, appears to be one of the concomitant factors which combine to produce the symptoms of paragnosia and paraphasia. Occurring as a prolonged aftersensation, perseveration may be regarded as a receptive difficulty. In the form of repetitive utterances within a word, or from a previously uttered word to the following one, the difficulty appears to be a problem of formulation or initiation. Both forms of perseveration can be detected in the typical paraphasia or jargonaphasia of receptive dysphasics.

INSTEAD of considering the results of this analysis from a quantitative point of view it seems more appropriate to regard them as a series of vistas through which the student of aphasia may view the disturbed linguistic mechanism in action. Every dysphasic subject has something in common with all dysphasics, but no sooner does one attempt to draw comparisons of common traits among dysphasics than the variable factors take on a formidable signifiance. As the student of life eventually realizes that no two experiences are exactly alike, the student of aphasia must admit that no matter how many dysphasics he studies, he will never be able to deal comprehensively with the problem of aphasia.

The aphasic's difficulties are only quantitatively outside the realm of normal experience. The 'aphasia' that is the plight of every person at one time or another in the forgetting of a name or a face is the brain-injured individual's constant affliction.

Christopher Cranch, who lived just one hundred years ago on the threshold of the study of aphasia, may never have heard of this problem; yet among his writings we have come upon a fragment of verse called "Gnosis" which artistically portrays the plight of our brain-injured, linguistically handicapped subjects:

> 'We are spirits clad in veils
> Soul with soul can never meet;
> We are columns left alone
> Of a temple once complete.'

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ANSWER, ANSWER, WHO'S GOT THE ANSWER?

Recently a number of representative physicians answered a questionnaire concerning the 'Classification of the Neuroses'; their opinions showed little except that hasty thinking and narrow outlook left confusion worse confounded. I agree with Van Wyck Brooks about questionnaires; the wise man does not give an answer merely because an answer is desired of him. Important questions are usually complex, and neither a smart epigram nor an orderly academic treatise is a satisfactory response. The answer must grow out of a point of view based on experience.

From *Borderlands of Psychiatry* by Stanley Cobb (Harvard University Press, 1943) P. 117.

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A Revised Classification of Disorders of Speech

Harry S. Wise*

THE general literary trend of logopedics in the twentieth century has been away from therapy as an intuitive art and toward correction by scientific methods. In practice, despite this transition on paper, speech rehabilitation has remained in a state of suspended, pre-scientific adolescence. It is time that this hiatus between practice and print be bridged, if speech therapy is to come of age as a science.

The gap is a matter of semantics, because no science can develop normally which has a defective semantic base; it is impossible to talk about a problem, much less develop a theory, without a specialized, orderly nomenclature. The creation of a sound semantic structure for a discipline never comes early in its development. First, there is a period of dawning recognition of the problem. This is followed by an era of slow development, during which many individuals of divergent backgrounds contribute to the general fund of knowledge. Unfortunately, they also contribute a divergence of terminology and viewpoint which temporarily halts the forward development of the science. During this plateau period there is a tendency toward provincialism and systematization on the basis of personal theory. Such a period of petty bickering over refinements of term, technique, and theory damages rather than promotes the growth of the science.

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The author wishes to express his gratitude to Drs. P. G. Moorehead, Head of the Department of Classics, Louisiana State University, and C. M. Wise, Head of the Department of Speech, Louisiana State University, for their assistance in selecting and adapting the Greek terminology.

For each local group, of whatever persuasion, an individualized vocabulary is developed to define the viewpoint of that group. Because there is no common point of departure and no common meaning for the terminology used, each science, when it arrives at this stage, reaches an *impasse*. It is in such a state that logopedics has found itself during the past three decades.

Recognizing the *impasse*, the American Speech Correction Association made its first important move to cut a new path toward progress in 1930-31 when it collected the major theories on that most controversial of subjects —stuttering—in a symposium (**3**). The success of this move and the pressing 'need . . . of a systematic international classification of disorders of speech . . .' resulted in the appointment of a Committee on Nomenclature. The purpose of the Committee was to '. . . prepare such a classification . . . (and) . . . a tentative dictionary . . .' (**2**, 3) of terms. This was completed and published late in 1931 under the title. *'Dictionary of Terms Dealing with Disorders of Speech'* (**2**, 1-27).

On acceptance of the commission, the Committee apparently felt that they had received a full patent of power from the Association to prepare the classification and dictionary. By taking this responsibility, they set out on the thankless task of charting the unknown waters of semantics as applied to logopedics. This called for originality and perspective. The Committee showed both, but in the cold light of hindsight it is evident that there are several important items, the revision of which will make for a necessary improvement. Such a revision will result in modifications based on a

detailed analysis of their work. While making this analysis, we may appear to deal severely with the Committee's efforts. We do this because so valuable a treatise deserves serious consideration. In no wise should the criticism be construed to be a personal reflection on the members of a group whose pioneering did not permit them our advantage of the test of time and usage.

The Analysis

THE Committee did speech therapy a very real service by collecting definitions of terms from the writers who had created them and by compiling the *Dictionary*.[1] For the first time it was possible to see, in a condensed form, the area encompassed under the general designation of *logopedics*. This knowledge was absolutely essential to the creation of any classification scheme.

Following the compilation of the *Dictionary*, and published as a part of the same volume, was 'A Tentative Abridged Classification of the Disorders of Speech.' After the *Dictionary* itself, this was the next forward step in the development of speech correction. Here the Committee had the right to create a new classification, international in scope, made up of new terms defined in a semantically standardized fashion. Actually, this classification constituted the Committee's real opportunity to make a revolutionary contribution. Unfortunately, though the terms created or adopted were of an international character, being based on Greek or Latin roots, as is customary in science, many of them were subject to the liability of carrying with them old connotations and even old definitions unsuitable to a unified classification. Moreover, the classes of disorders for which they were used were not mutually exclusive, but tended to overlap in a disconcerting fashion. *Any efficient scheme must make sharp lines of differentiation among its classes of disorders.*

The next problem lies in the manner in which the seven root classes were defined. According to the classical rules of rhetoric, a standardized series of related terms should be defined in a parallel fashion. The Committee's plan of definition for its seven classes was so constructed that it showed a cause-and-effect relationship; i.e., *dys*..... is a defect of speech due to..... (cause) resulting in..... (effect) While this formula is present in each case, it is obscured by seven different types of exposition and by the fact that the seven divisions were defined from five different viewpoints, presumably those of the several authorities credited with assisting the Committee. *The mode of definition of the terms of any well ordered scheme must be standardized by being defined with a parallelism of approach and form.* ('Approach' as used here, implies a single basic philosophy from which to attack the several problems.)

The third problem stems from the preceding. There is real genius shown in the principle of a 'suitable descriptive prefix' (**2**, 4) to be added to the class root. But the Committee has indicated no definitions of suitability; nor is there uniformity in description. *It is imperative that there be a single approach in the use of the prefix if the classification is to be 'systematic.'*

The final point which must be modified in the work of the Committee is their proposed use of a 'causal suffix' (**2**, 3). The principle is sound. But we have found no instance in which it has been applied either in the *Dictionary* or the classification! *The 'causal suffix' must be used, dropped, or modified, whichever is the most effective.*

In making the preceding analysis, we have taken the Nomenclature Committee at its word that it wished '. . . those engaged in correcting disorders of speech . . . to criticize and improve . . .' on its material.

[1] For a profession which uses phonetics as one of its main training tools, it is, perhaps, unfortunate that the Committee chose to indicate the pronunciation of its *Dictionary* terms in diacritics alone.

In using the classification as a teaching tool, we have found that it lacks unity. We propose to use the work of the Committee as a point of departure from which to prepare a revised classification which will be semantically standardized and drawn from a single, unified viewpoint. The result, we believe, will be an improved basic tool.

The Plan of the Revised Classification

Step One: *The Definition of the Area to be Classified.* Logopedics (Gk. *logos*-word; *pais*-child) is a science which deals with disorders of the linguistic portion of man's psychosomatic activity.

Step Two: *The Divisions of the Field of Logopedics.* In order to classify properly those disorders called defects of speech, linguistic psychosomatic activity needs to be subdivided. Theoretically, man has developed six linguistic activities which can be used either in combination or singly. Since these stem from a single linguistic code, they differ only in their manner of expression. They are:

a. The sub-vocal linguistic activity (or the thought code).

b. The tactile linguistic activity (or the deaf - blind, position - pressure code).

c. The gestural linguistic activity (or the signed code).

d. The graphic linguistic activity (or the written code).

e. The reading linguistic activity (or the read code).

f. The oral linguistic activity (or the spoken code).

Despite the fact that speech is an 'overall activity' in man, the speech pathologist deals only with disorders of the spoken code, since it is modifications of the oral output that call patients to his attention. For this reason, the present classification will deal with the oral code alone. Later, as the other branches come more into the realm of the speech therapist, or reach a comparable degree of maturity, they in turn may require the development of a unified scheme which will combine the several divisions of linguistic activity into a single classification.

Step Three: *The Divisions of the Spoken Code into Classes.* There are many approaches to a breaking down of the terminology dealing with the speech function. None will satisfy the demands of a 'systematic' classification that is not definite and whose terms are not mutually exclusive. This limitation of terms may be obtained either by overt definition or by dividing the function along natural lines of cleavage, i.e., into specific functional units. We propose, in our classification, to use the most natural units, separated from each other on a functional basis of division, with the limits of each arbitrarily set by definition.

There is a composite of six functional units in the production of speech, i.e., *regulation, respiration, phonation, resonation, articulation, and perception.* Since, in the previous analysis, we have ruled out the manner of use of the seven root terms found in the Committee's Classification, on the basis of their distracting connotations and their overlapping of each other, it is necessary to determine upon a new set of terms not subject to these objections. These terms, naming the disorders, will be six in number, corresponding to the six functional units listed above. As will be seen, we have been able to salvage one of the dictionary terms, *dysphonia,* whose connotation is in accord with the present plan of classification and which does not overlap any other term used. The root names of the classes of disorders, paired with the names of the normal functions as given above, are as follows:

regulation—dyskathexia [dɪskə'θɛksɪə]
respiration—dyspneumia [dɪs'njumɪə]
phonation—dysphonia [dɪs'foʊnɪə]
resonation—dyseuphonia [dɪsju'foʊnɪə]
articulation—dysplasia [dɪs'pleɪʒɪə]
perception—dysgnosia [dɪs'noʊzɪə]

a. **Dyskathexia** (Gr. *dys*—bad;

kathexis—a holding back or retention, i.e., a regulation); *a defect of speech due to disorders of the regulatory mechanisms of the nervous system (excluding those resulting from disorders of the afferent and efferent neurons).* Disorders of this type are defects of the initiation and control activity of the central and/or automatic nervous system which result in aberrant speech. As such, they embrace the neuropathologies and psychopathologies which create speech disorders but exclude the defects that result from environmental background such as foreign language dialect, infantile speech habits, etc. An example of this type of disorder is that seen in the loss of fine movement control over the tongue due to damage to the motor cells of the precentral gyrus of the frontal cortex.

b. **Dyspneumia** (Gr. *pnein,* to breathe; *pneuma,* breath); *a defect of speech due to disorders of respiration, including any defect of respiration resulting from disorders of the lower motor neuron.* An example of this type of disorder is seen in the interference with the breath rhythm of speech due to the increased speed of the respiratory cycle after collapse of one lung following unilateral phrenectomy.

c. **Dysphonia** (Gr. *phone*—voice); *a defect of speech due to disorders of vocalization, including any defect of vocalization resulting from disorders of the lower motor neuron.* An example of this type of disorder is seen in the hoarseness which results from unilateral paralysis of the vocal folds due to pressure on one of the recurrent laryngeal nerves by a mediastinal tumor.

d. **Dyseuphonia** (Gr. *eu*—good; *phone*—voice; thus, euphonia—good quality of voice); *a defect of speech due to disorders of resonance, including any defect of resonance resulting from disorders of the lower motor neuron.* An example of this type of disorder is seen in the loss of control over nasal resonance due to palatal immobility resulting from the action of a diphtheritic exotoxin on the peripheral portion of the trigeminus and vagus nerves.

e. **Dysplasia** (Gr. *plassein*—to mould (whence *plastikos*—plastic); a *defect of speech due to disorders of consonantal articulation (valve action) and vowel formation (mouth moulding) including any defect of articulation resulting from disorders of the lower motor neuron.* An example of this type of disorder is that seen in peripheral seventh nerve paralysis where, in talking, the paralyzed side of the mouth functions poorly or not at all, resulting in a sluggish, slovenly or disorganized consonantal articulation and vowel formation.

f. **Dysgnosia** (Gr. *gnosis,* knowledge); *a defect of speech due to disorders of the perceptive mechanisms* (i.e, *the end-organs and afferent neurons*). Disorders of this type result from defective proprioceptive, auditory, visual, or other senses, without which accuracy of speech production is difficult. An example of this type of disorder is seen in the deaf child who, though he knows the position of the organs for the production of a given sound and can see and feel how it is produced, substitutes a homologous sound for the correct sound.

In many instances, speech defects will appear to overlap two or more of the divisions listed above. The appearances belie the facts in most cases, for, with closer scrutiny, it will be found that there is a focal point from which all the other phenomena stem. For example, a tumor has necessitated the removal of the larynx, as a result of which no voice is possible. The action of the respiratory mechanism is modified due to the loss of the laryngeal orifice and the changed outlet; the function of resonance is nullified because there is no vibratory stimulus to actuate it. The articulatory function is modified by the loss of the airflow and the sound to be moulded. At first glance, the definitive nature of the classification appears to be destroyed

by this generalized disturbance. In which class should the disorder be placed? Still, the clinician with a minimum of perception will immediately limit the disorder to phonation and will so classify it. It is there that the focal point of disturbance lies. To verify this, it will be noted that, given the ability to phonate normally, the patient will find his other speech functions reacting normally.

But suppose there is an instance in which a duality of disorders occurs that does not stem from a single cause! How would these disorders be classified? For each disorder the causal focus would be located in the manner described above and the patient would be given two classifications, one for each of the unrelated disorders. For example, a soldier was returned from the fighting in Kairouon Pass in a semi-stuporous state induced by mortar blast. The base of his tongue was damaged by a shell splinter. The stupor was succeeded by an anxiety state. When he recovered from his wound, it was noted that all phonemes requiring the elevation of the base of the tongue were defective. Also, he was found to stutter whenever he was addressed sharply; but the stutter disappeared under 'treatment by narco-syntheses', concurrent with the loss of his severe 'anxiety state.' Here is a dual system of symptoms—poor articulation and stuttering—resulting from a dual set of causes. The focus for the articulatory disorder obviously lies in damage to the base of the tongue; therefore, it would be classed as a dysplasia. On the other hand, the stuttering is a matter of disturbance of the initiation and control mechanism of speech; therefore, it would be classed as a dyskathexia. Consequently, the patient is recorded under a double classification.

Step Four: *The Modification of the Specific Class Root by a Prefix.* Given the six general classes of disorders, the next step is to make the classification more precisely descriptive. In this we adopt the American Speech Correction Association's method of adding a prefix or prefixed words to the proper class root to indicate a specific disorder. The prefix used in this scheme will indicate the 'acoustic end result' of the disorder. For example, a child was unable to produce any voice. The class of disorder in this case is *dysphonia.* Since he could make *no* voice, the 'acoustic end result' is indicated by the descriptive prefix *a* (Gk. *a*—without). This prefix, substituted for the general prefix *dys* (Gk. *dys*—bad) with the root term indicates the type of disorder and the acoustic effect of that disorder, i.e., *a* + *phonia* = aphonia, without voice.

This method requires one modification in the case of the dysplasias. Here, there is the question of how to indicate the specific phoneme which is defective and into what phoneme it evolves. We propose, in this special instance, to add a double prefix to the root form. The first prefix will indicate the defective phoneme and the second the defect produced. For example, a child of ten has difficulty producing the sound [s], substituting [ʃ] for it. The disorder is a dysplasia. Therefore, the first prefix (the sound which is defective) is indicated by the prefixed International Phonetics Association (I. P. A.)[2] symbol [s]; the defect produced is indicated by the prefixed I. P. A. symbol [ʃ]. Thus the type of disorder and the acoustic effect is shown to be [s]-[ʃ] plasia.

Step Five: *The Modification of the Specific Class Root by a Postpositive Adjective.* The fifth step in creating a classification scheme with an absolute degree of specificity is to indicate the cause of the disorder. In this we have followed the example of the American

[2] The I.P.A. symbols are used in the place of Greek alphabet names because there is an insufficient number of characters in the Greek alphabet to designate all the phonemes of English or most other languages. It is suggested, in general, that in speaking of the phonemes, the letter names (or in a few cases, such as (tʃ), (dʒ), etc., the consonant sounds) be used for consonants and the vowel sounds for the vowels. This can be applied in every language.

Medical Association in their scheme for clinico-pathologists. To prevent the root term from becoming too bulky, we have abandoned the Nomenclature Committee's 'causal suffix' and adopted a scheme similar to that used by Lanneaus for biology and botany—a causal postpositive adjective. To illustrate, the child in the preceding example was a case of [s]-[ʃ] plasia. By examination the cause was found to lie in an extensive prognathism of the lower jaw. By adding the component parts of the diagnosis, the completed description is obtained, *viz.*, [s] - [ʃ] plasia prognathica. Thus, knowing the classification '[s]-[ʃ]—plasia prognathica,' the clinician has an abstract of the diagnosis of the patient's disorder.

Step Six: *Illustrations of the Use of the Classification Scheme in Typical Disorder States.* To demonstrate the manner in which the scheme outlined above can be used to build up a well organized classification and to give the clinician an abstract of the diagnosis, we propose to take an example from each of the divisions of the American Speech Correction Association's Classification scheme and transpose it.

Example I: (according to the American Speech Correction Association Classification, a dysarthria): Ranson (**1**, 472), in his *Anatomy of the Nervous System,* discusses a case in the following terms: '. . . a woman of 63 years, while working about the house, suddenly fell to the floor and was unable to rise. She had difficulty in speaking and her left arm and leg were paralyzed. . . . When the tongue was protruded it turned to the right due to the paralysis of its musculature on that side. The right half of the tongue was much atrophied.' We have observed a patient at Charity Hospital of New Orleans who had a similar lesion of the right hypoglossal nerve. The cause of the damage was a hypersensitive vascular lesion of the right side of the medulla oblongata in the region of the pyramidal tract. The acoustic effect in this case was not localized on any specific phoneme, but affected all the phonemes requiring the use of the tongue. As a result the articulation, although accurate, was labored.

According to our classification, the type of disorder was a dysplasia, since it involved articulation. The acoustic effect was labored articulation, which is indicated by the Greek prefix *mogis* (with toil). The cause of the defect was flaccid paralysis of the tongue. Thus the classification is, then, *mogiplasia lingua-flaccida* [ˈmoʊgəˈpleɪʒɪə ˈlɪŋgwə ˈflæsədə]—labored articulation due to flaccid paralysis of the tongue.[3]

Example II: (according to the American Speech Correction Association Classification, a dyslalia): A child of four was referred to our clinic by the surgeon who had repaired the patient's hard and soft palate. The closure was adequate and complete. The acoustic effect was a typical post-operative cleft palate speech with general velar inactivity resulting in the nasalizing of vowels and consonants. There was also a residual glottal stop substitution for the plosives, which was a carry-over from the patient's pre-operative difficulties. This patient must be classified under two classes:

a. The defective resonance control: *rhinoeuphonia uranischoplastica* [raɪ-noʊ.juˈfoʊnɪə ˈjurəˈnˈɪskoˈplæstɪkə] i.e., inadequate post-operative control of nasal resonance.

b. The compensatory articulation, i.e., [p, t, k, b, d, g]-[ʔ] *plasia compensata* [[p, t, k, b, d, g]-[ʔ] ˈpleɪʒɪə kəmˈpɛnsətə].

Example III: (according to the American Speech Correction Association Classification, a dyslogia): Mary

[3] According to the degree of specificity needed and according to the available information concerning the cause, the specificity of the classification becomes more exact. To illustrate this, note that the specific cause was hemorrhage into the medulla oblongata. Thus for greater specificity, the disorder would be classified as a case of *mogiplasia medulla-hemorrhagia*—labored articulation due to hemorrhage into the medulla oblongata.

....., a woman in the menopausal years, was hospitalized following a series of progressively more acute mental disturbances that forced her back, psychologically, to the stage of infantilism. She lay in the fetal position, babbled, was unable to eat without assistance, did not care for her bodily needs, and moved in a manner reminiscent of a six-months-old child. The hospital classification was involutional psychosis. Under shock therapy all of her symptoms disappeared except a latent child-like [r] defect which her elder sister said sounded like the patient in her childhood. Because she was embarrassed by the defect, she was brought to the clinic for help. The type of disorder was a dyskathexia, since it involved her mental processes. The acoustic effect was to substitute a [w] phoneme for the [r] phoneme after the fashion of a child. The cause was a residual psychotic symptom. Therefore, the disorder is indicated by [r]-[w] *plasia psychosia* [[r]-[w] ˈpleɪzɪə ˈsaɪˈkoʊzɪə].

Example IV: (according to the American Speech Correction Association Classification, a dysphasia): A soldier was forwarded to a base hospital because of a continued inability to produce any conscious speech. Despite this fact, he had control of all other language functions, being able to read, write, comprehend, and initiate thought. The patient was classed as a motor aphasic because of the position of the cortical damage which he had suffered in the field. The type of disorder is a dyskathexia, since it involves the control of the speech function. The acoustic effect was absence of speech (aphasia: *a*— without; *phasis* — speech). The cause was traumatic damage to the motor speech area. Therefore, the disorder is an *aphasiokathexia corticotraumatica* [əˈfeɪʒɪokəˈθɛksɪə ˈkɔrtɪko traʊˈmætɪkə].

Example V: (according to the American Speech Correction Association Classification, a dysphemia): A spasmophemic at the age of five gradually developed the stuttering syndrome. There was no parental censure and no history of stuttering in the family background. The child was brought to the clinic at the age of seven because his parents noticed he was becoming conscious of his speech condition. No cause could be demonstrated for the disorder. This is a case of dyskathexia. The acoustic effect was a repetitious speech output. The cause was unknown. Thus, the patient was classified as *dilogiokathexia incognita* [.daɪˈloʊdʒɪokəˈθɛksɪə ɪnˈkɑgnətə] (Gk. *dilogia*—split talk, repetition; Latin *incognita*—unknown).

Example VI: (according to the American Speech Correction Association Classification, a dysphonia): An immature college student was referred to the clinic for his persistent infantile speech. On laryngoscopic examination it was found that the larynx was of a pre-adolescent size and type. The cartilages were extremely pliable. There was no history of psychological retardation or social pressure to maintain the childish voice. The class of disorder is dysphonia. The childlike acoustic effect of his voice is indicated by the term *pedo* (Gk. *pais*—child). The cause of the disorder was physiological immaturity. Therefore, this disorder is classified as a *pedophonia physiologica* [.pɛdəˈfoʊnɪə .fɪzɪoˈloʊdʒɪkə].

Example VII: (according to the American Speech Correction Association Classification, a dysrhythmia): A nineteen-year-old girl, while brushing her teeth, inhaled a bristle which lodged in one of the bronchioles. This set up a focus of irritation which resulted in persistent and uncontrollable sighing. (The type of disorder found at this point would be a *bradygnosia irritatis* [.breɪdəˈnoʊʒɪə ˈɪrəˈtatəs] since it involves a sense organ disturbance.) During the process of removal (under anesthetic), the respiratory apparatus stopped functioning and artificial respiration was instituted. During this period a new Hering-Breuer mechanism was established, and a deep, slow, respiratory cycle

resulted. This persisted. The disorder is a dyspneumia. The acoustic effect was improper phrasing as a result of the persistent slow cycle. The patient's disorder was classed as a *bradypneumia artificialis* [ˈbreɪdəˈnjumɪə ɑrtəˈfɪʃɪˈæləs] (Gk. *bradys*—slow.)

Step Seven: *Suggestions for the Implementation of the Classification Scheme.* A classification has absolutely no value if it is not used. This implies its acceptance and use by the members of the organization for which it is developed. But, the Nomenclature Committee has seen its classification suffer extinction by neglect. For the new scheme, we propose to avoid this by implementing it with a planned program of development to be offered for adoption by the American Speech Correction Association. We propose:

a. That the members of the Association adopt the classification as a permanent scheme to be used by its members in their clinical files.

b. That a permanent Nomenclature Committee be created, empowered to create new terms to cover new speech defects, these terms to be constructed according to the method outlined in the classification.

c. That a permanent committee, not members of the Nomenclature Committee, whose decision shall be final, be created empowered to act on disputes over terminology.

d. That the Nomenclature Committee be required to develop a card index dictionary which shall be so cross-indexed that all terms (and their definitions), found in the literature to deal with disorders of speech, shall have a comparable term based on the classification scheme for formation and definition. (Note: the card index dictionary permits the committee to keep all members up to date on new terminology by the addition of a single card; these cards to be sent to all members of the organization.)

e. That the Committee be required to indicate the pronunciation of each term by both the appropriate I.P.A. phonetic symbols and standard dictionary diacritics.

f. That this Committee be empowered and required to communicate its decisions on terminology, and the decisions of the Committee on Disputes, to allied associations or their Nomenclature Committees (such as the American Medical Association, American Psychological Association, etc.) and to publishers of technical and unabridged dictionaries.

g. That all writers publishing in the Association's *Journal* be required to use the standardized terminology of the organization.

h. That it be proposed that all texts and articles on logopedics written by the members of the Association use the terms of the classification.

i. That the use of the classification in the routine teaching of logopedics be considered as one of the bases of assessment in any scheme adopted by the American Speech Correction Association for accrediting departments of speech and speech clinics.

Conclusion

A detailed analysis of the American Speech Correction Association's Dictionary and Classification scheme has been made. To correct certain serious deficiencies, a revised plan is proposed and examples of its use are given to illustrate its flexibility, specificity, and universality. To implement its use and to reduce misunderstanding in the field of logopedics, a series of nine proposals is presented to be enacted by the American Speech Correction Association. On the basis of intelligent application of these proposals, we believe the ground work has been laid for the development of a needed basic tool.

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Book Reviews

Ernest H. Henrikson*

LASSERS, LEON. *How Parents and Teachers Can Help Prevent Stuttering (or Stammering) in Children.* Portland, Oregon: State Printing Department, 1945, Pp. 48.

The work of the speech pathologist has many phases. One of the most obvious is his work with those who are defective in speech. Another part of his work is training others to become speech pathologists. But even at its best, these angles of his work will touch relatively few people. So there is a great need for him to spread his influence to include as many other people as possible, particularly those who have the most direct and significant influence on children.

Dr. Lassers' little bulletin is one attempt in this direction. I believe it is a very significant contribution. This work meets important qualifications for a work of this type. It is interesting. The plan of organization centers around the idea of 'eight keys that help open the doors to normal speech for children.' Striking drawings relate the more tangible idea of a key to a more abstract principle for speech development. This comparison makes the speech principle stand out with directness and clarity. The pamphlet is not only interesting but is also clear. Simple structure and vocabulary combine to insure comprehension. Of greater importance than interest and clarity is the factual content of this work. Dr. Lassers rides no pet hobby, defends no theory. He presents practical suggestions ranging from warning against the dangers of labeling to suggesting positive growth. The suggestions are well selected and are firmly grounded on what is known about stuttering today. This pamphlet merits wide circulation.

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JOHNSON, WENDELL. *People in Quandaries.* New York: Harper and Brothers, 1946. Pp. 532.

People in Quandaries is divided into five main parts. Part I, 'People in Quandaries,' deals with people's frustrations and demonstrates how vague, difficult, and highly-valued ideals contribute to this frustration. Part II, 'Scientific Living,' summarizes basic concepts of science and shows their application to every-day living. Part III, 'Words and Not Words,' presents a lucid summary of general semantics—the process of abstracting, with emphasis on both verbal and non-verbal levels, self-reflexiveness, multiordinality, time-binding, non-allness, non-identity, etc. The section includes, also, a discussion of major working principles of general semantics, such as symbol reaction, delayed reaction, extensionalization, and the extensional devices, and a description of practical working devices and techniques to implement these principles. Part IV, 'The Making of a Difference,' deals first of all with the 'verbal inaptitudes of people in quandaries'--extremes in verbal output; content, formal and evaluational rigidity; foolish questions and unreflective answers, and so on. Further, this section deals with major and more common maladjustments, pointing out non-scientific behavior patterns which characterize them and stressing the great importance of language factors in their etiology and therapy. Part V, 'Applications,' presents specific suggestions about how the principles discussed in this book may be applied when working with 'other people's quandaries.' A special section is given over to the application to stuttering. The book ends with a section of semantic exercises and a summary of some of the outstanding studies of language behavior done by Johnson and his students.

Workers in the field of speech correction are not unfamiliar with Wendell Johnson and his work. From this contact they have come to expect certain standards in the things he presents, whether in the form of specific studies or in broader areas of analysis. This reviewer believes that *People in Quandaries* carries on and enlarges the already extremely significant contribution made to the field of speech correction and related fields by Wendell Johnson. In this book the reader will find:

1. Thorough and disciplined scholarship. The author draws on his own extended study, experience, and research, and adds outstanding contributions of other scholars. He presents his discussion with keen analytical discernment and with seasoned and objective insight.

2. Excellent writing. This book is written in a lucid and forceful style. The excellence of writing includes the whole book, ranging from the intriguing title down to

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the smallest clarifying example. This does not mean that the book is 'easy' reading, in the sense that the Sunday supplement is easy reading. There is nothing frothy or sensational about the book. On the other hand, the author makes no attempt to impress the reader through the use of complex verbiage, nor does he consider it beneath the dignity of scholarly writing to use homely illustrations and quotations to clarify his principles. The language of the book is varied and forceful; the organization is clean-cut.

3. Challenge. Characteristic of the work of the author, as this reviewer has followed it, is an attitude of analysis-for-further-analysis. The same attitude characterizes *People in Quandaries*. It makes no attempt to be the book-to-end-books about the problems considered. Rather, it presents certain materials and points of view with which the reader may be in a position to go ahead, better prepared for further analysis and for meeting new problems as they arise.

Speech correction must of necessity draw heavily on the many sciences for specific materials and techniques. Speech correction profits greatly, also, to the extent that workers in this area can make use of what may be called the scientific point of view. This value extends all the way from the carefully carried out research project of the research laboratory through to the individual work with the person who has a speech defect. Wendell Johnson presents a most significant and challenging analysis of that scientific point of view and indicates how it may be applied both in and out of the laboratory. Reading *People in Quandaries* should prove to be an interesting, informative, and challenging experience for anyone who works in the field of speech correction.

ERNEST HENRIKSON.
University of Colorado

STANLEY, DOUGLAS, *Your Voice*. New York: Pitman, 1945. Pp. 306.

Despite the full title of this book, which is *Your Voice—Applied Science of Vocal Art, Singing and Speaking*, it is with the singing voice that the author is primarily and specifically concerned. Except for such general techniques and problems as breath control, relaxation, and the management of resonance, some of which can be applied to both singing and speaking, the material devoted to speaking alone is contained in one short chapter of eight pages.

It appears difficult for writers of books on singing to prevent some reference to speech from appearing in the title. This temptation to include speech doubtless rests upon the assumption that the two activities, singing and speaking, are essentially similar and that objectives and techniques for training the singing voice can also be recommended for the speaking voice. In the opinion of this reviewer the assumption is true only at the most general and rudimentary level, with the exception of such special factors as pitch control, pitch recognition, vocal flexibility, and sensitiveness to quality changes, training in which contributes materially to the advancement of the student or teacher of voice training for speech. Beyond these considerations, however, it must be recognized that the voice is being trained to perform in essentially different ways in the two activities and as a result there is not the degree of 'carry-over' from the one to the other that one might expect.

Dr. Stanley (Mus.D.) states in his preface that the chief purpose of this book is to provide an application to the actual work of the vocal teacher of the scientific principles of voice presented in the author's two previous works, *The Voice, Its Production and Reproduction*, and *The Science of Voice*. A considerable portion of the text of the former book is included in the present volume printed in smaller type.

That Dr. Stanley knows the essential facts of voice science there can be little doubt. Furthermore, he uses this knowledge pretty successfully as a base for his suggestions and recommendations for voice development. In this connection, he goes considerably farther than many voice scientists would, treating such concepts as registers, for example, as objectively established realities.

This is not a voice exercise manual; there are virtually no vocal exercises or drills as such in the book. It consists, rather, of technical discussions of problems of voice production and training, explanations of good and bad practices, directions, and certain techniques of manipulation involving the tongue, the jaw, and the larynx. Very detailed discussions are included of such subjects as registration, falsetto, vibrato, intonation, melodic line, interpretation in singing, and the control of pitch and intensity. Some interesting comments and observations are based upon a comparison of abilities and techniques of the older singers (Caruso and his time) with those of outstanding performers of the present day (not referred to by name, however).

The author includes a technical glossary in which 115 terms dealing with singing and voice production are discussed, ranging in scope from 'vibrato' to 'ham actor.' A second glossary contains explanations of 34 acoustical terms. This is a book well worth the investigation of those interested in voice science as applied to such problems of voice production and training as have been referred to in this review.

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MORKOVIN, B. K., KINKADE, J. M., and CAZIARC, D. R. *Aural Re-education; Psychological and Therapeutic Aspects.* Los Angeles: Hearing Soc. Quar., Coordinating Council of Soc. for Hard of Hearing in So. Calif. 1946, p. 43.

The authors emphasize the importance of recognition of early relationships, in infancy, between gesture of pantomimic communication and verbal comprehension. This building up of speech perception is called metalalia, or the forming of word associations as a result of sound imitation and the relating of verbal sounds to objects, persons and actions. The fusion of hearing with understanding comes about as a result of non-verbal as well as verbal cues, the total Gestalt forming a complicated pattern of learning. A speech-perception formula is presented in which A (attention) plus AVKR (audi-visual-kinaesthetic-rhythmic impressions) establish certain language patterns (LP) associated with life situations (LS) and intentions of the speaker as behavior patterns (BP). All of these together equal speech perception (SP). Failure to develop normal speech in deafened persons often leads to maladjustment, emotional upsets, personal and economic difficulties. The authors make use of such clinical methods as psychological tests, hearing tests, social and educational tests, and studies of potential abilities, interests and aptitudes. Several histories of hard of hearing and deaf children are presented in an interesting way. Coordination of the various multi-sensory avenues of learning, together with the use of hearing aids and auricular training, greatly improves the socialization and speech skill of the patient. Motion pictures using life situations are a part of the special techniques, the on-looker becoming trained in the art of reading the speech which is given silently in the film by the various actors. Such films are a part of the modern training of deafened service men and women in many Army and Navy hospitals. Several examples from case histories illustrate this and other methods in use in the clinic at the University of Southern California. Creating the desirable 'social climate' for the patient is considered important in avoiding prejudices, ignorance and social discrimination among the patient's associates. Incentive and motivation, in order to arouse the adult to make the necessary effort and to persist, are stressed in order that the individual may carry on by himself, among new friends, new faces, new jobs and with new assets, even though different from that to which he had earlier accustomed himself in the adult situation.

SARA STINCHFIELD HAWK.

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HINSIE, LELAND E. *The Person in the Body.* New York: W. W. Norton. 1945. Pp. 263.

The ability of a surgeon is often best established when, because of his skill, he makes a task appear so easy that even the least initiated feels he too could perform it.

The present volume by Professor Hinsie, written for the guidance of the patient and the general practitioner, well illustrates this phenomenon. If one suffered the compulsion, so frequently exercised by reviewers, that it were necessary to voice adverse criticism, it would be that the book's simplicity, ease of understanding and clarity might have a tendency to make the subject appear too clear, too understandable and therefore, too applicable.

Early in the book Dr. Hinsie states categorically, 'People do not get sick when there is nothing wrong with them: they do not rebel against those who irk them with the retort, "You make me sick and tired," without meaning or cause, even though it be obscure. The phrase "nothing wrong" should be dropped from the physician's vocabulary, because it is obvious that people who are troubled do have something wrong with them.'

The author contends that the not too specifically trained practitioner, even as he recognizes abnormalities in other organs of the body, should be able to discern physical deviations. '*Psychosomatic* medicine is the architectonics of the human being.'

A valuable chapter on 'The Force of Emotional Growth' introduces a carefully graded development scale of sensorimotor achievement from two months of intrauterine life through puberty. One-third of all the problems in the practice of medicine, Dr. Hinsie asserts, are those of psychoneuroses which are not first presented to the physician as psychical problems.

Dr. Hinsie reserves opinion as to whether grief or frustration can produce disease of actual pathology but concludes that 'it would appear, however, that many biological disorders may be a consequence of the combined action of mental and physical elements and that it is no longer tenable in the description of an ailment to refer to the cause as either mental or physical.'

Such philosophy and approach is so much more satisfying and convincing than unsound hysterical opinions which so often result from over-enthusiasm in behalf of new ideas. It is a pleasant relief to read the chapter entitled 'Marriage as a Cure for Sickness.' The psychosomatic problems of marriage are most frequently the end result of a long series of personality reactions, brought to a stage of acuteness by the marriage. And the success or failure of marriage depends not so much upon the inadequacy or the immaturity of one of the

parties, but rather upon the manner by which the two persons concerned adjust themselves to each other. The constructive help which so characterizes other parts of the book is here somewhat lacking, however, although it serves its purpose well by inviting the attention of persons professionally charged with giving advice to the probability that few if any ills are cured by marriage and that it is not the great panacea. In this connection the discussion of climacteric disturbances, involutional melancholia and other neuroses are presented in scholarly fashion.

A helpful note is struck in the chapter entitled 'The Epileptoid Person'—'A type of personality made up of a peculiar set of character traits stamping the individual apart from others.' The author states that 'much can be done through treatment to benefit the psychosomatic symptoms . . . [which] . . . means that many of the organic symptoms are removable through psychotherapy.'

Socio-economic factors, as a part of the environment, are touched upon by Dr. Hinsie. 'Ego-Impoverishment,' as well as 'Unconscious Forces,' plays a great part in producing psychosomatic symptoms. The author presents eight tests necessary for the patient to pass in order to qualify for his part in psychotherapy: '(1) The general approach of the patient to his autobiography; (2) the ability to face his inner self; (3) the capacity to see the relationship between emotions and physical complaints; (4) the wish to get well; (5) transference; (6) the projection mechanism; (7) examination under duress; (8) intelligence—all within the easy reach of examination by any physician.' The object of psychotherapy, according to the author, is to bring original emotion and ideas to the surface so that their true meaning may be understood.

The book makes it clear that the successful practitioner has always used some form of psychosomatic approach despite the fact that the medical literature is now being much weighted by this newly formulated technique. One can easily fall into serious error, however, if he is not skillful in differentiating between purely psychosomatic aspects and real pathology. Because of the ease with which Professor Hinsie embraces the subject it is necessary to emphasize that the person who practices psychosomatic methods must be conversant with physical as well as mental deviation. It is not a substitute for knowledge. In fact, a greater diagnostic as well as a greater therapeutic skill is required, a knowledge of psychotherapy as well as organotherapy. There should be no repetition of over-emphasis on technique, such as occurred where psycho-analysis as the method of treatment for symptoms of headaches and feelings of pressure in the head terminated because the patient died of cerebral tumor.

In the pages specifically devoted to personality tests, one is struck by the author's failure to urge and recommend quantitative evaluations made possible by psychological tests. It is understandable that diagnosticians of Dr. Hinsie's skill are quite capable of reliable subjective determinations, but a disregard for the excellent work of Murray, Hathaway, McKinley, Cowan, Bernreuter, Pressey, McFarland, Seitz, Allport, *et al.* is difficult to explain. The use of laboratory findings in surgery and medicine are no reflection upon the diagnostician; rather, they can be a pleasing corroboration of opinion and by the nature of the measurements which they involve they make possible an actual score as a basis for subsequent comparison.

The psychosomatic aspect of speech disorders could enlighteningly have been included, but it is to be assumed that the planned brevity did not permit inclusion of this subject which would have been so helpfully received by workers in the field of speech correction.

The Person in the Body is a volume which should find its place in the libraries of sociologist, psychologist, and educator, as well as the psychiatrist and general practitioner. Perhaps for the time being its use by such trained persons would be more valuable than its application by the layman. To repeat, the book is well written, readable, informative and useful and is recommended to all those concerned with the treatment or appreciation of human behavior.

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Abstracts of Current Articles

Mary Huber, Editor*

DESPERT, J. LOUISE. Anxiety, phobias, and fears in young children. *Nerv. Child*, 1946, **1**, 3-15.

The author reports on the analysis of records of 78 children from the Payne Whitney Nursery School in her investigation of the problems of anxiety, phobias, and fear in young children, with special reference to factors related to the parental, natal and neonatal periods.

Unfavorable birth conditions, the investigator concludes, are important contributing factors in the genesis of anxiety in young children. She recommends that the maternal psychological background of children with unfavorable birth conditions be investigated. *(Leonard Finlan, New York University.)*

FRIES, MARGARET E. Importance of continuous collaboration of all agencies is dynamic in handling of the child. *Nerv. Child*, 1944, **4**, 22-33.

In a case history of a child from birth to grade 5 B, the author illustrates an integrated health program in which the physician, the family, the educator, and the social agency cooperate. The record form used is excellent and all-inclusive; it throws considerable light on how early childhood affects the reactions of this 11-year-old boy.

Emphasis is placed on the need for cooperation between all interested agencies in handling behavior problems; the usual mistakes made when this cooperation is not maintained are pointed out. *(Leonard Finlan, New York University.)*

GELLHORN, E., CORTELL, R. and MURPHY, J. P. Are mass discharges characteristic of central autonomic structures? *Amer. J. of Physiol.*, 1946, **146**, 376-385.

The authors are concerned with finding out to what extent a partial discharge of the sympathetic system may be obtained by suitable stimulation of the spinal cord and the higher autonomic centers.

The method used was that of anesthetizing 26 cats with chloralose, pentothal plus chloralose, or dial-urethane and then studying the effect of electrical stimulation of the dorsal surface of the spinal cord at various levels as well as excitation of autonomic structures in the medulla oblongata and hypothalamus.

Stimulation of the spinal cord showed that the autonomic discharges are largely segmental. This the authors explain on the basis of the segmental arrangement of autonomic functions in the cord. Stimulation of the sympathetic centers in the medulla oblongata and hypothalamus may, the authors say, result in similar effects due to unequal numerical distribution and marked differences in threshold of the neurons mediating the various specific sympathetic functions. *(Tamara Pollack, Halloran General Hospital.)*

HANSEL, F. K. Allergy in otorhinolaryngology and ophthalmology. A Review of the recent current literature. *Laryngoscope*, 1946, **46**, 121-134.

This review of the literature indicates that allergic states have been noted following the use of new drugs, including penicillin and the sulfonamides. Not infrequently these induced allergic states resembling other pathological conditions or exacerbations of the conditions for which the medication was used. *(Jeanette Anderson.)*

KELLY, A. H., BEATON, L. E. and MAGOUS, H. W. A midbrain mechanism for facio-vocal activity. *J. of Neurophysiol.*, 1946, **9**, 181-189.

In an effort to localize a previously indicated center for facio-vocal activity during emotional expression, the effects of rostral brain stem lesions produced in 9 cats, chosen for their normal or exaggerated display of this activity upon nocioceptive stimulation or when confronted with other animals, were examined.

The effects of the lesions can be divided into two groups. In the first, animals with diencephalic or rostral midbrain lesions remained with facio-vocal activity unimpaired after operation. The cats in the second group, those with central midbrain lesions, did not exhibit such activity after the operations. The authors were able to rule out the theory that the cessation of activity was due to interruption of afferent pathways to higher levels or interruption of descending pathways because, after lesions of the hypothalamus and rostral midbrain and midbrain-diencephalic junction, facio-vocal activity during emotion still continued.

The general conclusion then drawn was that the aqueductal grey and the adjacent tegmentum beneath the superior colliculus contain intrinsic structures which precipitate emotional facio-vocal activity. The

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maintenance of other behavior (general behavior and other oral activities such as panting) caused the authors to conclude that this center is not concerned with integration but merely precipitation of activity. *(Tamara Pollack, Halloran General Hospital.)*

KORZYBSKY, ALFRED. A veteran's re-adjustment and extensional methods. ETC.: *A review of general semantics.* 1946, **3**, 254-264.

Korzybski presents and discusses an account in the veteran's own words of the successful use of non-aristotelian extensional methods in dealing with emotional disturbances which had resulted from experiences in combat in the Pacific theater. The veteran wrote his report after attending ten lectures in a course in general semantics taught by Professor Elwood Murray at the University of Denver.

The author uses this example to point out that large numbers of psychiatric casualties and disturbed veterans can be reached and treated successfully by non-medical group therapy using the techniques of general semantics.

A foreword by Lt. Col. Douglas M. Kelley, M. C., reports that the basic principles of general semantics were successfully applied as group psychotherapy and psychiatric prevention in his own experience with over seven thousand cases in the European theater. He advocates group training in extensional methods for all returning servicemen. *(William J. Temple, Brooklyn College.)*

LE SHAN, LAWRENCE and EDA. Abstraction ability and head injury. ETC.: *A Review of General Semantics,* 1946, **3**, 224-225.

In working with soldiers who have received brain injuries the authors were struck by the fact that men with abstraction ability impaired by cortical damage had great difficulty in adjusting to ordinary situations which most of us take for granted.

Reference is made to the studies of Kurt Goldstein who believes abstracting ability to be located in the calcarine cortex.

This loss can be seen most clearly in the inability to perform two processes: (1) inability to hold one factor constant while examining another factor and so compare the two; (2) inability to shift from one mental set or attitude to another.

The purpose of the presentation was to show the tremendous amount of sane, healthy abstraction that goes on in everyday life. The individual who has lost, to a significant degree, the ability to abstract is prevented from adjusting at levels on which he was able to make a satisfactory adjustment before he incurred the loss. *(M. H.)*

LOEBLOWITZ-LENNARD, H. and RIESSMAN, F., A cleanliness test devised by a stutterer. *Psychiat. Quart.,* 1946, **20**, 135-137.

The case under discussion is a man of 26 years whose parents had died when he was two; he was educated and brought up by his grandmother. The onset of his stuttering came during the public school period. The patient had complete infantile amnesia up to the age of five.

During one of the patient's conversations with the author he developed a theory of personality built around 'degrees of cleanliness.'

The author believes that this case is illustrative of Fenichel's emphasis on the anal compulsive character of stuttering. He suggests that more information is needed on the incidence of cleanliness interests, bacteria phobias, infantile amnesia, and early or late toilet training among stutterers. Of particular interest would be an investigation of the temporal variations between the end of toilet training and the onset of speech between non-stutterers and stutterers.

If more evidence can be presented to warrant the classification of stuttering among the compulsion neuroses, it may be asked if it will be of value in perfecting more adequate psychotherapeutic techniques. *(Arthur Secord, Brooklyn College.)*

ORENSTEIN, J. J. Child psychology and the eating problem. *Hygeia,* 1946, **24**, 512-513, 557.

Parents must comprehend the whole pattern of the child's makeup in order to understand and eliminate particular problems. If a parent is overly concerned about the child's affairs, the youngster should be given freedom in working out his own problems. Signs of inadequacy and inferiority should be looked for in the child, and he should be encouraged and given responsibilities with which he can cope.

A systematic procedure for meals, should be arranged. There should be no nagging about not eating, and no lecturing the child about his misbehavior at mealtime. *(Virginia Worthington, Wisconsin.)*

PODOLSKY, E. The genius and his brain. *Med. Rec.,* 1946, **159**, 162-163.

This article states that the brain of the man of genius does not reveal his status in its structure but in other and related factors. It is for this reason that it is only within recent times that a real understanding of the secret of genius is possible. The brain of the genius shows its superiority in the structures surrounding it and upon which the brain depends for its proper functioning. These include (1) a rich blood supply, as seen in the brain cover-

ings. The blood vessels of superior brains are abundant and of greater calibre than those of the ordinary brain. (2) The state and function of the pituitary gland. In the man of genius it is always fully developed and perfectly functioning. It is never diseased. (3) The state and function of the adrenals. These are always more fully developed in the man of genius. Their secretions are essential to kindling and maintaining superior mentation. (4) The state and function of the dependent endocrine glands, the thyroid and the gonads. These are always in good working order. Their secretions enter intimately into the chemistry of cerebration. *(Arthur Secord, Brooklyn College.)*

POTTER, RALPH K. Visible patterns of sound. *Science,* 1945, 463-470.

This is an introduction to the subject of visible patterns of sound, as developed in the Bell Laboratories, and a description of some of the more general aspects of working with them. A careful study is being undertaken of the patterns of various sounds and sound combinations in respect to their likenesses and differences for the purpose of teaching sound patterns to the deaf. Although the learning rate has been somewhat slow (as compared with learning lip reading, shorthand, or a foreign language) the rate has definitely progressed as the training methods and translators have been improved.

It has been found easier for the eye to follow the three-dimensional patterns rather than the two-dimensional type. The experimenters are still dissatisfied with the display of pitch. Potential uses for these sound patterns in the teaching of speech correction are many. (*Loretta Wagner Smith, Brooklyn College.*)

REED, H. B. Factors influencing the learning and retention of concepts. I. The influence of set. *J. exper. Psychol.,* 1946, **36**, 71-87.

The problem of this experiment was to discover the influence of set on the learning and retention of concepts. The study indicates that a set to learn meanings as well as names yields a much higher rate of learnings and a higher degree of retention than a set to learn names only. Concepts logically formed are learned more quickly and better remembered than those illogically formed. A set to learn names and their meanings yields a much larger number of logical concepts than a set to learn names only. Subjects instructed to learn names and their meanings search much more frequently for logical relationships than do those instructed to learn names only. *(Arthur Secord, Brooklyn College.)*

RHEINGOLD, HARRIET, L. Interpreting mental retardation to parents. *J. consult. Psychol.,* 1945, **9**, 142-143.

The interviewer is encouraged to let the parent himself give sufficient material for a diagnosis. Through suggestion he gives the information in terms of the development of other children and thereby supplies a measuring rod which has meaning for him. He is then led a long way towards an understanding of the child's retardation and will not then reject the interviewer's diagnosis. Results of tests should be presented to parents in terms of mental age and in phrases such as 'about four years,' or 'between 7 and 8 years.' The terms 'idiot,' 'imbecile,' or even 'high grade mental defective' are never used. The psychologist talks about the child as one who is 'slow to learn,' and occasionally as a 'mentally retarded child.' Parents who are considering commitment are told that 'feeblemindedness' is a legal term. The psychologist refrains from predicting the child's life history.

The psychologist usually discusses etiology in terms of the many different causes advanced by medical science, the universality of the problem, the possibility of attributing it to fortuitous circumstances in the absence of more definite etiology. While the psychologist's statements in this area should be as accurate as possible, his attitudes and comments should be directed more toward allowing the parents an opportunity to bring out into the open their own thoughts on the subject rather than towards presenting them with a detailed review of medical knowledge.

The type of interview suggested in this article leads to emotional acceptance of the problem and helps the parent plan for the immediate situation. *(M. H.)*

RISEMAN, BENJAMIN, and AAGESEN, WALTER J. Laryngeal neurosis incident to military service. *Arch. Otolaryngol.,* 1946, **43**, 22-24.

The authors, who are members of the U. S. Army Medical Corps, describe 17 patients in the armed service (14 men, 3 women) who complained chiefly of prolonged hoarseness of rather sudden onset. Ten of these cases presented the typical picture of ventricular speech. After investigation to rule out organic disease, they were studied by physicians in the neuropsychiatric service. In each case, mental or emotional conflict was found to be of etiological significance. The following types of therapy were used, either singly or in combination: (1) suggestion, (2) suggestion under narcosis, (3) reassurance, (4) relaxation, (5) taking advantage of patient's credulity, (6) appealing to the patriotism of

the patient, (7) taking the patient unaware in an unguarded moment, (8) speech education, (9) local treatment of a harmless nature. Fifteen of the patients were subsequently returned to military duty, and two were discharged on other bases, after all had regained normal speech. Brief reviews of the 17 cases are given. (*Katherine F. Thorn, Minnesota.*)

SEVERSON, INGEBORG. A report on the hearing conservation program. *Spec. Educ. Rev.*, 1945, **3**, 20-22.

On March 1, 1944, the superintendent of schools of Newark, New Jersey, directed the department of special education to temporarily assume the plan of discovery of the deaf and hard of hearing in the public schools of Newark.

From March 1, 1944, to June 15, 1945, the group test was administered to 24,205 pupils in 44 elementary schools. Of this number, 613 pupils had a loss of 12 decibels or more in the better ear. These 613 pupils were retested on the pure tone audiometer. Of this number 392 of those administered the group test, had a loss of 12 decibels or more in the better ear.

Case histories of the 613 pupils tested on the pure-tone audiometer were compiled. The hearing test results and the information recorded on the case histories were analyzed. One hundred five pupils were found to need placement in hearing conservation classes and 147 to need lip reading instruction. Thus 1.041 per cent of the pupils tested in this survey were found to need special services. (*Arthur Secord, Brooklyn College.*)

SYMONDS, C. P. Prognosis in closed head injuries. *Brit. Med. Bull.* 1945, **3**, 14-17.

A closed head injury may be defined as one in which the force, however applied, has not involved penetration of the dura mater. Although in most cases surgery is necessary for the scalp, the major problem is the assessment of brain damage by neuropsychiatric measures. Examination in the early stages following head injury has revealed disturbance of special functions—dysphasia, visual agnosia, acalculia and 'constructional apraxia.' The electroencephalogram changes are related to consciousness and are of no prognostic value unless they reveal the area of local damage. The surgeon should take into account the severity and extent of the cerebral damage as measured by the depth and length of unconsciousness.

Determination of intellectual impairment may be based on an estimate of the pretraumatic capacity of subsequent improvement accompanying consciousness. The psychological stability and stamina of the individual before the injury can be secured from family and personal histories. Examination of the nervious system to discover signs of local brain injury or damage to cranial nerves are of prognostic importance; these are X-rays, examination of cerebros pinal fluid, and electroencephalogram. In many instances it is feasible to get the patient back to his environment and occupation in order to watch his progress before attempting a prognosis. Even when complete reovery seems to appear, traumatic epilepsy may develop later. (*Alice Mendenhall, Minnesota.*)

THOMAS, J. Attitudes are important. *Crippled Child*, 1945, **23**, 121.

In an effort to further the social guidance of the physically handicapped, the author discusses some of the problems that have come to him as a child and adult 'spastic.' This article is particularly valuable for teachers and students interested in education of the atypical student, but it is also extremely revealing for the lay populace. Mr. Thomas speaks of the attitudes on the part of the social group which have been such destructive forces for him. These attitudes are applicable not only to this man, but to every man and woman so afflicted. The writer shows a great deal of insight in describing the social and economic problems of the physcially handicapped individual. These problems are intensified by (if not partially created by) the society which fails to realize its responsibility in aiding the disabled individual, or at least allowing him the same opportunities that would be granted to the individual not so disabled. (*Doris L. Trepel, Brooklyn College.*)

WRIGHT, A. J., Cochlear deafness. *Proc. Royal Soc. Med.*, 1946, **39**, 265-269.

In this paper the author points out that the cochlear lesion of Meniere's disease precedes the vestibular lesion in the majority of cases and often for a long period. The clinical picture thus presented is of tinnitus variable in type and degree, with progressive deafness which is usually unilateral. The deafness tends to be variable and is often accompanied by hyperacusis and paracusis. It is perceptive in type but tuning fork tests are likely to mislead if masking of the better ear is not employed. The author mentions that a sense of fullness in the affected ear is usual and inflation may produce a short-lived improvement in hearing. These latter findings tend to lead to a mistaken diagnosis of a middle-ear defect. *(Calvin Pettit, George Washington University.)*

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